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PHILIPPINE CICADELLIDÆ (HOMOPTERA)

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FOUR PLATES

INTRODUCTION

The Nearctic and Palæarctic species of the family Cicadellidæ, which includes many pests of crops, have been well worked. However, the Oriental species, especially those of the Malayan region, have been very little studied. Distant¹ thinks the Cicadellidæ, being practically unworked in certain sections of the world, may prove to be the most extensive family of the Homoptera.

The description of Philippine species started with miscellaneous collections by early collectors. Most of the specimens described were from the British Museum. Among the early workers were Walker, Stål, and Signoret. Later Melichar, Kirkaldy, Matsumura, Distant, and Baker became prominent as describers of eastern Palæarctic, Oriental, and Australian, as well as Indian, Cicadellidæ. Baker collected and described more Philippine species of this family than all of the other above-mentioned workers together. All of Baker's work on Philippine Cicadellidæ was published in the Philippines. His collection in the United States National Museum is practically untouched.

The nucleus of the present work on Philippine Cicadellidæ was the few specimens that I took from the Islands, and material subsequently sent to me, from time to time, by my associates

¹ Fauna Brit. Ind. Rhynch. 3 (1906) 52-54.

in the Bureau of Plant Industry. The collection of Professor Osborn contributed several new species and many interesting old forms. Later my studies were extended to the United States National Museum, primarily for the purpose of comparing my types and determinations with the extensive Baker collection from the Philippine Islands. Several additional forms were studied and are described in this paper.

In general I have followed Distant² in the arrangement of these insects. It has been necessary, of course, to include some genera subsequently erected by Baker, Kirkaldy, Matsumura, and others, under divisional groupings according to Distant's synopsis. For structural characteristics and descriptions with reference to the names of sclerites and the wing venation of species, the excellent plates of Edwards³ and Osborn⁴ were consulted and adopted.

In this work I have described or determined eighty-three species, thirty-four of which are new; thirty-nine are old species of known Philippine distribution, and fourteen are species reported for the first time from the Philippines. In checking Baker's material and comparing it with the original descriptions, nine more species were listed for the Philippines for the first time. With the descriptions of the species I have recorded the distribution, the host plant, and the economic status where such information was available. *Agellus* DeLong and Davidson, with a known Australian and Nearctic distribution, is here recorded for the first time in the Orient. Four species are described. *Macropsis* was believed to be exclusively Nearctic, Palæarctic, and Ethiopian in distribution, but nine species of this genus came to light in the Philippine material and are herewith described. *Cicadula* is here first recorded as a Philippine genus.

Two genera are erected, one to receive two species, and the other, three. One genus is given a new name. This preoccupied and monotypic genus of Distant,⁵ *Aliturus* (now *Alituralis*), receives another species in this paper.

ACKNOWLEDGMENT

The present study of Philippine Cicadellidæ was made possible by the encouragement and unfailing assistance of Prof. Herbert Osborn, of Ohio State University, under whose direction this

² Op. cit. 4 (1908).

³ Hemiptera-Homoptera of the British Isles. L. Reeves & Co. (1896).

⁴ Ohio Biol. Surv. 3 No. 4 (1928).

⁵ Fauna Brit. Ind. Rhynch. 4 (1908) 398, No. 2667.

work was undertaken. He placed at my disposal his collection of Philippine cicadellids and his private library, which contains a wealth of invaluable literature on this group of insects.

My thanks are also due to Mr. P. W. Oman, taxonomist of the order Homoptera in the United States National Museum, for valuable suggestions and help at the museum, and for the loan of some specimens from the Baker collections; to Dr. H. L. Morrison, in charge of the insect division of the United States National Museum (now of the Bureau of Entomology and Plant Quarantine), for furnishing me with working space and equipment; to Dr. D. M. DeLong for aid, especially in the genus *Agellus*; to Dr. E. P. Breakey, of the department of zoölogy and entomology, Ohio State University, for valuable suggestions and criticism during the early part of this work, the reading of the manuscript, and the checking of some of the specimens, especially those of the genus *Macropsis*; to my colleague in the Bureau of Plant Industry, Mr. F. Q. Otanes, of Manila, who from time to time sent me specimens collected in various parts of the Islands by the inspectors of the Philippine Bureau of Plant Industry; and above all to Dr. Manuel L. Roxas, who did everything possible to enable me to complete my work.

During the preparation of this paper I was guided by the excellent publications of W. L. Distant, C. F. Baker, and H. Osborn. I have occasionally referred to the works of F. Edwards, D. M. DeLong, and E. P. Van Duzee.

Most of the drawings were made by Mrs. C. W. Taft, some by Mr. F. B. Whittington under my supervision, and the rest were drawn by myself.

In the preparation of the check list with the original bibliography and synonymy, I am indebted to Baker's unpublished notes for the names of some species and their synonyms.

ECONOMIC IMPORTANCE OF THE CICADELLIDÆ

The Homoptera are of great concern to man. Among them are insects causing extensive injury to plant life. They are mostly of small size, multiply rapidly, and adapt themselves readily to all climatic conditions. Their attack goes unnoticed until the plants have lost so much vitality that they are either stunted or killed. The Cicadellidæ, therefore, are probably the most important family in this group of insects.

Their astounding breeding capacity, their mode of attack, which is to keep themselves always under the leaves of the host plants, together with their small size and protective coloring,

result in large numbers of them not being noticed until the plants attacked are ready to die.

Usually, however, these attacks do not cause the death of the host plants, but only greatly reduced vitality and productivity. For this reason their presence often escapes notice.

Serrano and Palo⁶ estimated the loss of mango fruit due to the persistent attack of the mango leaf hoppers *Idiocerus clypealis* and *Chunra niveosparsa* for 1932 in three mango-growing provinces of Luzon to be 75.32 per cent of the crop.

These small insects occur in great numbers and feed especially on the sap of the young growing shoots. When the hoppers are numerous the amount of sap extracted by them is sufficient to prevent growth and to cause the loss of the entire crop of fruits. Lefroy⁷ found that *Nephotettix apicalis* and *N. bipunctatus* multiply enormously and are a distinct plague to rice in India. *Cicadella spectra* Distant is another of the cicadellids that is numerous and ranks as a major pest of rice in India. These three species also occur in abundance in the Philippines and are certainly as bad rice pests here as in India.

Imposca flavescens, the well-known green fly of tea, whose distribution is world-wide, is a serious pest in India. This species damages cotton and various solanaceous crops in the Philippines.

LIFE HISTORY

Life-history work in this family is practically untouched. It is a field of considerable interest, as these insects have well-defined habitats and plant hosts and seem to be readily affected by such ecologic factors as temperature, moisture, and natural enemies.

Aside from work on the mango leaf hoppers *Idiocerus clypealis* Lethierry and *Chunra niveosparsa* Lethierry, for whose damaged Serrano and Palo⁸ proposed the name "blossom-blight of the mango" to distinguish them from the less abundant leaf hoppers found on mango, no life history has ever been attempted on Homoptera in the Philippines.

The cicadellids have multifarious habits. Some are arboreal, some live and breed on herbs and bushes, some on reeds, and many of them feed and breed on old or green pasture grass. Some are solitary, others swarm in great numbers. It is

⁶ Philip. Journ. Sci. 50 (1933) 211-277.

⁷ Indian Insect Life. Thacker, Spink & Co., London (1909) 738.

⁸ Philip. Journ. Sci. 50 (1933) 211-277.

supposed that most of them breed the year round with more or less predominance in certain favorable seasons. Certain species multiply during the dry season, and others appear in great numbers during the rainy season.

The preponderance of a species, however, depends more or less on the abundance of its hosts, and the stage of the host which is succulent to the species concerned. The grass types multiply in great numbers during the rainy season when grasses are growing most vigorously. In the Philippines *Nephotettix apicalis* and *N. bipunctatus* are numerous in the early part of the rainy season, during June, when rice is beginning to grow vigorously. *Idiocerus clypealis* and *Chunra niveosparsa* are abundant on forced mangoes in November and December and on mango blossoms during the regular season; that is, from January to April.

GEOGRAPHIC DISTRIBUTION

The cicadellids have well-defined habitats and plant hosts. Their distribution is limited by climatic conditions and the distribution of their host plants.

In the Tropics plant distribution seems to limit the distribution of the species. The mango pests of India are of the same subfamily as those that attack mangoes in the Philippines, the Idiocerinae. Whether or not the species of *Idiocerus* on the mango in India are distinct from those in the Philippines is questioned. Sugar canes and bananas have specific leaf-hopper pests that are more or less widely distributed. Some of the species attacking rice are as widely distributed as the area where rice is the commonest crop. *Nephotettix apicalis* Motchoulsky is present from India to Japan, including, of course, the countries and islands intervening.

The distribution of cicadellids is limited by land barriers, high mountains, large bodies of water, and climatic conditions. Each faunal region, unless affected by certain agencies of dissemination, has its own faunal characteristics. The Philippine cicadellids are distinctly Indo-Malayan, tinged with certain Palearctic elements, which were introduced by commerce. It is possible that some Neotropical species are present due to the early importation of plants from Mexico. However, such introductions are doubtful in view of the distance, the slow transportation at the time, and the bringing of seeds mostly instead of living plants. Some leafhoppers from China and Japan may have gained a foothold through constant importations of or-

namental plants. Perhaps some are due to a land bridge, which may have existed between continental Asia and some part of the Philippines, or a similar connection between Indo-Malayan regions and Palawan and adjacent islands. Some Australian species have been recorded in the Philippines.

Although the species of *Makilingia* are distinctly Philippine, the Idiocerini are most likely of Indian origin. It is difficult to determine the origin of most of these species unless we know their habits and their host plants, as well as the native homes of such hosts. We know that most of the existing species of wide distribution are arboreal. The Tartessusaria, Idiocerini, and most of the well-known Typhlocybinæ and Cicadellinæ are arboreal insects, possibly transported by commerce.

SYSTEMATIC RELATIONS OF THE HOMOPTERA AND DIVERSITY OF OPINION CONCERNING THEM

In the classification of Homoptera first consideration was given to the number of the tarsal and antennal joints, and the character of the wings. Thus Westwood, according to Distant,⁹ divided the Homoptera as follows:

Trimera. Tarsi 3-jointed and antennæ minute; wings areolate.

Dimera. Tarsi 2-jointed and antennæ moderate, 6- to 10-jointed; wings areolate.

Monomera. Tarsi 1-jointed, antennæ 6- to 25-jointed; wings not areolate.

Monomera is represented by one family, the Coccidæ; Dimera includes the Psyllidæ, the Aleurodidæ, and the Aphididæ; and Trimera includes the Auchenorrhyncha, on the phylogenetic position of which the authorities disagree.

It is admitted by all that among the trimerous insects the Cicadidæ are the lowest and most generalized, due to the presence of the three ocelli, the venation of the wings, and the poor development of the nervous system.

Here the question arises whether the Membracidæ should follow the Cicadidæ or the Fulgoridæ. It is the opinion of some writers that the Cicadellidæ, because their morphological characteristics and mode of development, occupy the highest rank among the Auchenorrhyncha. Funkhauser,¹⁰ however, suggests that the membracids should be placed between the Cicadidæ and the Cicadellidæ, because the treehoppers have strong affinities with the leafhoppers, and probably came from the same

⁹ Fauna Brit. Ind. Rhynch. 3 (1906) 52.

¹⁰ Conn. Geol. & Nat. Hist. Surv. Bull. 34 (1923).

stem as the Cicadellidæ. Lawson,¹¹ in having the Cicadellidæ follow the Membracidæ, bases his opinion on the New World insect known as *Aethalion*, which looks very much like the Cicadellidæ and has certain characteristics that led Stål and Van Duzee to place it with the Membracidæ and Ashmead to place it under the Bythoscopidæ. Again he bases his reason for such arrangement on Fenton's¹² work on leaf-hopper parasites, according to which *Aphelopus* is the only genus of the Anteoninæ that parasitizes the Typhlocybinæ and is also the only genus that was found on the Membracidæ, and as such the Typhlocybinæ are considered the lowest subfamily of the Cicadellidæ, closest to the Membracidæ. Fenton shows that the Anteoninæ parasitize the Membracidæ, Cicadellidæ, and Fulgoridæ. Thus the three above families show close affinities. Because of the protective froth which envelops the young, the Cercopidæ escape parasitism.

Imms¹³ also is of the opinion that the Membracidæ are most nearly related to the Cicadellidæ. Edwards¹⁴ arranged the families so that the Membracidæ follow the Cicadellidæ, and the Fulgoridæ (Issidæ) follow the Cicadellidæ (Tettigometridæ). DeLong¹⁵ places the Cicadellidæ between the Membracidæ and the Fulgoridæ. However, he admits the close relationship between the Cercopidæ and the Cicadellidæ. He says that *Penthimia americana* Fitch and certain species of *Gyponas* and the Acocephalini closely resemble the cercopids. The most striking of the Australian forms are the much larger species of the *Eurymela* group of genera comprising *Eurymela*, *Eurymeloides*, and *Eurymelops*. According to Tillyard,¹⁶ these handsome wedge-shaped species superficially resemble the Cercopidæ. In my collection I have a *Poophilus*, a cercopid, that is so similar to this group that only examination of the tibial spurs will prevent its confusion with the leafhoppers. As a group, DeLong adds, the Fulgoridæ are most easily confused with the Cicadellidæ. Distant,¹⁷ however, had the families arranged as follows:

¹¹ Kansas Univ. Bull. 12 (1920) 28.

¹² Ohio Journ. Sci. 18 (1918).

¹³ A General Textbook of Entomology. Dutton & Co. Inc., New York (1929) 357.

¹⁴ Hemiptera-Homoptera of the British Isles. L. Reeves & Co. (1896) 15.

¹⁵ Conn. Geol. & Nat. Hist. Surv. Bull. 34 (1923) 58.

¹⁶ The Insects of Australia and New Zealand. Angus & Robertson, Ltd. (1926) 164.

¹⁷ Fauna Brit. Ind. Rhynch. 3 (1906) 52-54.

Cicadidæ, Fulgoridæ, Membracidæ, Cercopidæ. I do not clearly see the purpose of such arrangement. It seems that with the position and development of the ocelli, the antennæ, the pronotum, the wing texture, and the tibial spurs (spines), the following arrangement might be followed: The Cicadidæ are the lowest and most generalized of the Homoptera. The Membracidæ, due to the poor development of the nervous system and the peculiar absence of the forms, which explains the absence of the third ocellus (wings very generalized, simple genital organs), and the peculiar and useless development of the scutellum, come second. The Cercopidæ, with less bizarre form and texture of the wings, scutellum, the arrangement of the tibial spurs (nearer to Cicadidæ), the ocelli, and the antennæ, might be subordinated to the Cicadellidæ. They should be preceded by the Membracidæ, however, for the reason that some of them generally resemble the Membracidæ more closely. The species of *Machaerota* have the scutellar process long and arched, its apex extending in the same manner as that of the membracids. In *Machaeropsis* the scutellar process gradually shows recession. Distant¹⁸ claims that the subfamily Machaerotinæ is the connecting link between the Membracidæ and the Cercopidæ, and the Cercopidæ should be subordinated to the Cicadellidæ. The Fulgoridæ, with the location of the antennæ (which are lower than in the Cicadellidæ) and the scutellar development, may be considered the most modern and specialized family of the Homoptera.

The Cicadellidæ belong to the division Trimera, and are one of the five families in this group; namely, the Cicadidæ, or "harvest flies," the members of which are the largest species of the group; the Fulgoridæ, or "lantern flies," which feed on the leaves and stems of herbaceous plants; the Membracidæ, or "treehoppers," which feed on twigs; the Cercopidæ, or "frog-hoppers," also known as "spittle bugs" because of the frothy masses that they make on the stems of grasses; and the Cicadellidæ, or "leafhoppers," which feed mostly on the leaves of plants. Kirkaldy¹⁹ defines "leafhoppers" as a convenient, nontechnical term, to express auchenorhynchous Homoptera, excluding the Cicadidæ, but including the sternorhynchous family Psyllidæ (Chermidæ), generally known as "jumping plant lice."

¹⁸ Op. cit. 4 (1908) 79.

¹⁹ Rep. Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906).

The large family Cicadellidæ is separated from the other related groups by the more or less closely spinulose condition of the posterior tibia and the position of the ocelli. The position of this important family is still the subject of considerable difference of opinion among workers. Westwood recognized only three families in the order Homoptera; namely, Cicadidæ, Fulgoridæ, and Cercopidæ. Stål, supported by Hansen, recognized four; namely, Stridulantea, Cercopida, Fulgorida, and Jassida which include Membracida (Distant²⁰). Edwards,²¹ excluding Psyllina, enumerated fifteen families, which come under the present consideration of the group: Cicadellidæ, Ledridæ, with one genus; Ulopidæ, with one genus; Paropidæ, with one genus; Bythoscopidæ, Tettigonidæ, Acocephalidæ, Jassidæ, and Typhlocybidæ are considered families. Kirkaldy²² placed under the superfamily Tettigonioidæ the family Tettigoniidæ with its subfamilies: Tettigoniinæ, Jassinæ, Agallinæ, Penthiniinæ, Eupteryginæ, Ledrinæ, Stenocotinæ, Kahavaluinæ, and Megophthalminæ.

Baker²³ opposed what he termed the "antiquated artificial system" originally proposed for a few species formerly known in Europe; namely, if the ocelli are located on the disk, the specimen is a tettigoniellid; if on the margin, a jassid; and if on the face, a bythoscopid. He listed under the superfamily Jassoidea fifteen families; namely, the Tettigoniellidæ, the characteristics of which comprise those of the members of the *Tettigoniella* of Distant,²⁴ excluding the genera *Signoretia*, *Preta*, *Eucanthus*, and *Bundera*; the Gyponinæ, without the genus *Penthimia*; Penthimidæ, those of the genus *Penthimia*; Thaumatoscopidæ taking in the genera of Kirkaldy, *Thaumatoscopus* (allied to *Gypona*, and *Penthimia* and *Vulturinus* which I would consider a *Thaumatoscopus* itself—there is hardly sufficient reason for raising *Vulturinus* to the category of a genus); Ledridæ, those of the subfamily Ledrinæ; Paropidæ, taking the genera *Mesoparopia* of Matsumura and *Paropia*; Stenocotidæ with the genera *Stenocotes* and *Kyphocotes*; Koebelidæ, the genus *Koebelia*; the Ulopidæ, under which belong the genera *Ulopa* and *Moonia*; Signoretiidæ, *Signoretia* of Stål and *Preta*

²⁰ Fauna Brit. Ind. Rhynch. 3 (1906) 52-54.

²¹ Hemiptera-Homoptera of the British Isles. L. Reeves & Co. (1896).

²² Rep. Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906).

²³ Philip. Journ. Sci. 24 (1923) 57-71.

²⁴ Fauna Brit. Ind. Rhynch. 4 (1908) 201-202.

of Distant; Eucanthidæ, *Eucanthus* and *Bundera*; Pythamidæ, consisting of *Onukia*, *Pythamus*, and *Oniella*; Nirvanidæ, having *Kana* Distant, *Ophuchus* Distant, *Stenometopius* Matsumura, and *Nirvana* Kirkaldy; and the genera recently erected by Baker—*Pseudonirvana*, *Nirvanoides*, *Pythonirvana*, and *Jassonirvana*.

DeLong,²⁵ considering the Connecticut species, divides the Cicadellidæ into four subfamilies based principally upon the location of the ocelli and the shape of the body: Bythoscopinæ, Jassinæ, Cicadellinæ, and Gyponinæ. The Typhlocybini becomes a tribe of the Jassinæ. Distant, following in the main the classification of Van Duzee, divided the Cicadelli into seven subfamilies: Ledorinæ, Bythoscopinæ, Tettigoniellinæ, Gyponinæ, Acocephalinæ, Jassinæ, and Typhlocybinæ. However, the Acocephalinæ are absorbed by the Jassinæ in his synopsis of the genera.

Lastly, Melichar²⁶ divided this family into two large sections, based mainly upon the shape and sculpture of the vertex and pronotum; the Proconiaria with 54 genera, and the Cicadellaria with 100 genera. However, according to China,²⁷ many of Melichar's generic names were preoccupied. Inasmuch as Melichar's types and discussed species were from southern America, and in view of this radical change in classification, I shall mention his work only as a reference.

CHIEF CHARACTERISTICS OF THE CICADELLIDÆ

In the classification of the Philippine species described herein, the main features or characteristics of the groups were taken into consideration according to different authorities with special reference to the work of Distant²⁸ and of Osborn.²⁹

Family CICADELLIDÆ Latreille

Cicadellæ LATREILLE, Fam. Nat. Reg. An. (1825) 427.

Cicadellina BURMEISTER, Handb. d. Ent. 11 (1835) 103.

Cicadellines BLANCHARD, Hist. des Ins., Hemip. (1840) 187.

Tettigoniidæ FITCH, Homop., Fourth Ann. Rep. N. Y. State Coll. Nat. Hist. (1841) 55.

Jassina STÅL, Stet. Ent. Zeit. 19 (1858) 234.

Jassidæ FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 500.

Jassoidæ VAN DUZEE, Trans. Am. Ent. Soc. 19 (1892) 296.

Tettigonioidæ KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 295.

²⁵ Conn. Geol. & Nat. Hist. Surv. Bull. 24 (1923).

²⁶ Ann. Mus. Nat. Homop. 21 (1924) 195-243.

²⁷ Ann. & Mag. Nat. Hist. IX 20 (1927) 281.

²⁸ Fauna Brit. Ind. Rhynch. 4 (1908).

²⁹ Ohio Biol. Surv. 3 No. 4 (1928).

The family Cicadellidæ was divided into seven subfamilies; namely, Ledrinæ, Bythoscopinæ, Tettigoniellinæ, Gyponinæ, Acocephalinæ, Jassinæ, and Typhlocybinæ. As a matter of convenience, the groups under the subfamily Acocephalinæ were placed under Jassinæ.

The insects are comparatively small, ranging from 2 millimeters in length, including the tegmina, among the Typhlocybinæ, to 18 millimeters among the Ledrinæ; tibia more or less elongated, hind tibia characteristically armed with a double row of spurs; tarsi 3-jointed; ocelli two, placed on the anterior just slightly above the margin of apex, in the Bythoscopinæ in front, below the margin; in the Tettigoniellinæ, Gyponinæ, and Ledrinæ, on the vertex (sometimes variable in the Ledrinæ); and in the Typhlocybinæ the ocelli are wanting; the antennæ setaceous, 2-jointed, and terminated by fine long hairs, invariably placed between the frons and the eyes; the tegmina, or superior wings, are thicker than the membraneous, or inferior, wings, which are folded at rest.

In the Cicadellidæ the position of the ocelli; the shape, size, and sculpture of the vertex, pronotum, and scutellum; the shape and size of the frons and the clypeus; the arrangement of the venation; the coloration or markings; and the external and internal characters of the genitalia are the principal taxonomic features for the grouping and the separation of species.

LEDRINÆ

Head broad; face moderately concave or somewhat convex; vertex spatulate, horizontally reclined, narrowly depressed or moderately convex; cheeks flat and white, frons and clypeus narrowly produced; antennæ inserted under the anterior part of head above the line of the eyes and far from them.

The only species studied was a *Petalocephala* in the Osborn collection.

Genus PETALOCEPHALA Stål

Petalocephala STÅL, Öfv. Vet.-Akad. Förh. (1853) 266.

Ledropsis MELICHAR (nec White), Hom. Fauna Ceylon (1903) 141.

Type, *P. bohemani* Stål, from Java.

Distribution: Ethiopian, Oriental, Malayan, and Australasian Regions.

Body very oblong or a little elongate, depressed; head clypeated, foliaceously produced anteriorly; vertex somewhat flattened; face beneath eyes strongly and abruptly, thence gradually, narrowed, margins very slightly defined; front small, narrow, flattish; eyes small; ocelli situated towards base of vertex, farther removed from the eyes than from each other; pro-

notum transversely sexangular, not, or only slightly, narrowed anteriorly, the lateral margins acute, anterior lateral much longer than posterior lateral, anterior margin slightly rounded; scutellum triangular, subequilateral; tegmina subcoriaceous pellucid, densely punctate, tectiform, anteriorly conjointly convex, clavus very broad before the middle, corium obliquely rounded at apex, veins somewhat irregularly anastomosed towards apex, legs somewhat short, anterior coxæ free, posterior tibiæ remotely dentate.—STÅL, translated by DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 162–163.

PETALOCEPHALA CULTELLIFERA Walker.

Petaloccephala cultellifera WALKER, Journ. Linn. Soc. Zool. 1 (1856) 98.

Ledra punctifera WALKER, List. Hom. Suppl. (1858) 249; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 95.

Originally known from Sikkim; Mungphu (Atkinson collection); Darjiling (Brit. Mus.); Malay Peninsula; Perak (*Doherty*); Singapore (*Wallace*, Brit. Mus.) Distant.³⁰

Length excl. tegmina, 15 to 17; exp. tegmina 28 to 32 millimeters.

Virescent or ochraceous; vertex about as long as breath between eyes, conically produced towards apex, thickly finely punctate, centrally longitudinally carinate; pronotum finely punctate, posteriorly finely rugulose, centrally longitudinally linearly impressed; tegmina thickly punctate; posterior tibiæ inwardly strongly dentate.—DISTANT, Fauna Brit. Ind. 4 (1908) 164.

LUZON, Mountain Province, Haight's Place, Balbalan (Osborn collection). This is the first Philippine record.

BYTHOSCOPINÆ

This subfamily is readily recognized by having the ocelli on the face below the anterior edge of the head, the vertex narrow or apparently wanting, the head being entirely deflexed.

Key to the Philippine genera of the subfamily Bythoscopinæ.

*a*¹. Tegmina without an appendix.

*b*¹. Pronotum distinctly produced beyond the anterior margin of the eyes, and oblique rugæ *Macropsis* Lewis.

*a*². Tegmina with a distinct appendix.

*b*¹. Pronotum not produced beyond the anterior margins of the eyes.

*c*¹. Vertex with eyes much broader than pronotum, head rounded.

*d*¹. Ocelli nearer the eyes than each other..... *Idiocerus* Lewis.

*d*². Ocelli equidistant from each other and the eyes.

Idiocerinus Baker.

*c*². Vertex with eyes slightly broader than pronotum, transverse, head blunt, transversally depressed..... *Bythoscopus* Germar.

*b*². Pronotum shorter and narrower than the scutellum and vertex together *Chunra* Distant.

³⁰ Fauna Brit. Ind. Rhynch. 4 (1908) 164.

Genus MACROPSIS Lewis

Macropsis LEWIS, Trans. Ent. Soc. Lond. 1 (1835) 49.

Pediopsis BURMEISTER, Gen. Ins. (1838) pl. 10.

The very narrow vertex is distinctly produced beyond the anterior margins of the eyes. The head is as wide as the pronotum. The lateral margins of the pronotum are short, the anterior margin as in *Tartessus*, the posterior concave, and the surface obliquely striated; the scutellum with a transverse depression before the apical angle, slightly broader than long; the tegmina thin and folded over the body as in *Bythoscopus*.

In this genus the males are darker and occasionally spotted (although the males of Nearctic species often show fewer markings than the females). The markings are not found in females of this genus, whereas in *Idiocerus*, a genus of the same subfamily, the spots are found in the females.

This genus, although apparently of world-wide distribution, has not been recorded from the Malayan region. Stål³¹ described one species, *Macropsis maculipennis*, which is said to be a *Bythoscopus*. In Baker's collection there are several Japanese species determined by Matsumura under *Pediopsis*, which is a synonym of *Macropsis*. There are three specimens labeled *Macropsis*, but they belong to the genus *Bythoscopus*.

Breakey,³² speaking of the geographic distribution, says that the genus is best known from the North Temperate Zone, and according to references found by him, ten species are described from the Ethiopian Region, four from Australia, one from Santo Domingo, eleven from the British Isles, outside of the thirty-two species and three varieties recognized by him as present in North America. Oshanin³³ recorded four species and one variety from Europe (one of them is a *Prosina* which was also recorded from Siberia), one from Japan, and two from China. Fowler³⁴ records two species of *Stragania* Stål, from Mexico, which were treated as a subgenus of *Gypona* and subsequently placed under the Jassinæ by Stål himself as being synonymous with *Macropsis* Lewis. In this paper (Hemiptera Africana 4: 126-127) he renamed *Bythoscopus olivaceus* Stål *Macropsis subolivaceus* Stål. Distant³⁵ described three species of *Pediop-*

³¹ Öfv. Vet.-Akad. Förh. 27 (1870).

³² Ann. Ent. Soc. Am. 25 (1932) 4.

³³ Ann. Mus. Zool. de Sci. 11 (1906) 67-69.

³⁴ Biol. Cen. Am. Rhynch. 2 pt. 1 (1909) 271.

³⁵ Fauna Brit. Ind. Rhynch. 6 (1916) 238-240.

sis (*Macropsis*) from India. These so far are the only *Macropsis* species known in the Indian fauna. Cogan³⁶ described one more species from Africa (*Pediopsis capensis*).

Specimens of the following nine new species were compared with Nearctic and Palæarctic species at the United States National Museum:

MACROPSIS BREAKI sp. nov.

Female, length, including tegmina, 3 millimeters; male, length, including tegmina, 2.8.

Very small, robust, ochraceous all over, vertex regularly and transversely punctured with brown punctures, and transversely striated, about one-fourth as long as the distance between eye and middle of vertex; pronotum extended anteriorly, right-angled, median line indistinct, oblique striation rugulose, regularly punctured with brown, posterior angles in line with scutellum, oblique; posterior side slightly concave. Scutellum lightly punctured; face slightly tumid, appearing rugose from the side, clypeus minute, lora and gena almost invisible, ochraceous; plates of male long and spindling; the last ventral segment of female almost truncate, slightly projected at middle; pygofer very large; tegmina sordid hyaline, profusely and finely punctured with brown punctures.

MINDANAO, Zamboanga (holotype, Baker collection, U. S. N. M.).

I take pleasure in naming this beautiful species for Dr. E. P. Breakey, of the Department of Zoölogy and Entomology, Ohio State University, a homopterist to whom I am indebted for valuable suggestions and criticism during the progress of this work.

MACROPSIS RIZALI sp. nov.

Female, length, 4.5 millimeters.

Head, pronotum, and scutellum yellow; face, legs, and body beneath ochraceous, with brownish markings on the abdominal segments and pygofer, somewhat slender in form. Tegmina long, greenish transparent, with venation prominent, deeper green and yellowish green. Slender and medium-sized species. Pronotum regularly rugose, lightly marked with brownish patch on the anterolateral angle, prominently produced, anteriorly almost right angled, posterior side slightly concave. Median line obsolete; scutellum subtriangular, slightly broader than long, finely punctured; face broad, slightly tumid when viewed from

³⁶ Ohio Journ. Sci. 14 (1916).

side, forehead regularly and finely striated; frons elongated, slightly differentiated by shallow sulci; clypeus short and broadly rounded; lora minute, narrow, and elongated; gena narrow and elongated, depressed below the area of face, broader at apex; last ventral segment a projecting semicircular plate, slightly notched.

MINDANAO, Zamboanga Province, Dapitan (type and paratype, Baker collection, U. S. N. M.).

I am naming this species for the foremost Philippine hero, Dr. Jose Rizal, physician and scientist, who spent a few years in Dapitan as a political exile during the Spanish domination of these Islands.

MACROPSIS BENGUETENSIS sp. nov.

Female, length, 6 millimeters; male, length, 5.

Pale ochraceous with profuse brown and fuscous markings on the pronotum and scutellum, tegmina light brown with profuse fuscous markings. Male slightly darker.

Vertex almost invisible from dorsal view, obtuse-angled, at the middle much narrower than the portions close to the eyes, appearing as a line; pronotum obtuse-angled, broader than long, moderately convex, with a very distinct fuscous blotch or marking on each side of the anterior line, midway between the antero-lateral and the median line which is slightly carinate or ridged, the oblique ruga, starting from the upper middle portion to the lower side and gradually to the umbral angle, very prominent and roughly punctured; middle portion of the pronotum profusely marked with brown; scutellum ochraceous, roughly punctured, posterior angle sharply pointed and separated by an arcuate suture, somewhat striated with transverse striæ on upper-lateral angle, with obliquely triangular fuscous markings; face ochraceous, broad, almost flat, slightly tumid on the clypeal portion, contour slightly rough, coarsely and profusely punctured; frons sordid, tinged with ferruginous, especially in males; eyes brown with slight fuscous blotch on inner portion, loræ and genæ minute, ocelli on the face between eyes and frons; antennæ minute, beneath the inner posterior angle of the eyes, above the deeply sulcated cheek; pectus and venter ochraceous with fuscous markings on the portions of the prosternum and metasternum, femora, tibiæ, and tarsi, especially noticeable in males, tegmina membranous brown, strongly corrugate, sordidly marked with irregular fuscous markings; venation prominent, ochraceous, stippled with fuscous. A robust species.

LUZON, Benguet Subprovince, Baguio (type and allotype, Baker collection, U. S. N. M.).

MACROPSIS FUSCOVENOSA sp. nov.

Male and female, length, 4 millimeters.

Pronotum and scutellum of the female grass green, the pronotum of the male pale brown with profuse fuscous punctures, the scutellum of the same color and with the same punctures, and with one fuscous triangular marking on each of the three angles; eyes grayish with crimson tinge; the face, pectus, legs, and venter of female greenish ochraceous, with brown markings on the legs; those of the male ochraceous, with brown punctures on the face, and brownish markings on the legs. Dimorphism is distinct in this species.

Pronotum convex, slightly less than a right angle, oblique impressions prominent, median line present, about two-thirds as long as broad, the posterior side narrowed and concave; scutellum almost as long as broad, as long as the pronotum, median line present, posterior angle separated with arcuated suture, with coarse brown punctures, face with median line also, rough surface, slightly longitudinally carinate on the middle; gena small and depressed, narrow margin extended to the base of clypeus, which is also small and narrowed at apex; the plates of the genitalia slender and elongate (filiform), the last ventral segment of the female small, wedge-shaped; tegmina long, smoky pale brown with very prominent fuscous venation.

LUZON, Benguet Subprovince, Baguio (type and allotype, Baker collection, U. S. N. M.).

MACROPSIS FUSCOPUNCTATA sp. nov.

Female, length, about 4.75 millimeters.

Greenish ochraceous with sordid brown promiscuous punctures all over head, face, pronotum, scutellum, and tegmina, quite similar in form to *M. fuscovenosa*, but slightly larger; pectus and legs with brownish markings.

Pronotum distinctly angulate anteriorly, rectangular, median line distinct, striæ profusely punctured with brown dots, rugulose, posterolateral angles rounded, middle posterior side slightly concave; scutellum greenish ochraceous, with median line profusely punctured with brown spots, especially the three angles, the posterior separated by an arcuated suture; face roughly striated and punctured, sordidly marked with brown markings, oblique striation from middle to the eyes deep, median line present, reaching nearly to clypeus; frons distinguished by two

parallel, semicircular, brown lines, clypeus broadly rounded; lora and gena small; pectus and legs with brown markings; venter greenish ochraceous; last ventral segment transversely triangular, wedge-shaped; tegmina smoky hyaline, long, with profuse brown punctures, especially the commissural region; venation punctured all over with brown.

LUZON, Benguet Subprovince, Baguio (type and paratype, Baker collection, U. S. N. M.).

MACROPSIS OTANESI sp. nov.

Female, length, 4.25 millimeters; male, length, 4.25.

Testaceous to fuscous, medium-sized; face, pectus, legs, and venter ochraceous, with a brown tinge, the upper portion of the head semitransparent fuscous. Vertex very narrow and projected in front, about one-fifth as broad as the distance between the eye and one-half of the vertex; pronotum testaceous, with short, fine, oblique striation, regularly and profusely punctured with fuscous punctures, median line absent, acutely angled, slightly more than right-angled, about three-fourths as long as wide between humeral angles, posterior side subtruncate; area of scutellum more testaceous and less thickly punctate, lateral angles smoothly brown, transversal suture separating the posterior angle; face smoothly rugose, ocelli ochraceous, situated between and near the eyes; legs and venter ochraceous with brownish tinge; pygofer orange-brown; the plates castaneous; tegmina fuscous to castaneous, with irregular fuscous markings.

BASILAN (type and allotype). MINDANAO, Zamboanga (paratypes, Baker collection, U. S. N. M.).

I take pleasure in naming this species for my friend and loyal assistant Mr. F. Q. Otanes, of Manila, who from time to time has supplied me with homopterous insects for determination.

MACROPSIS BASILANA sp. nov.

Female, length, including tegmina, 5 millimeters.

Dark brownish ochraceous, vertex, pronotum, and scutellum ochraceous with a brown marking on each basal angle of scutellum; tegmina sordid hyaline, brown with fuscous markings at the ends of principal veins, and division of principal cells, face, pectus, venter, and legs ochraceous, pygofer with a brown patch on the middle of each sheath; ovipositor exceeds the length of the pygofer considerably, as long as tegmina or slightly longer; vertex acutely produced, slightly more than right-angled, about one-fourth as long as the distance from the middle to the eyes;

transversely and briefly striated, finely punctured, with fine testaceous dots; pronotum with same color ornamentation and sculpture as the vertex, produced slightly more than a right angle in front, posterior side somewhat concave, markings on center and posterior side darker than rest, median line absent; face, forehead center semihyaline, brown, rugose; clypeus, lora and gena minute, similar to *M. otanesi*, but relatively slenderer and longer, especially the ovipositor.

BASILAN (type). MINDANAO, Zamboanga (paratype, Baker collection, U. S. N. M.).

MACROPSIS LUZONENSIS sp. nov.

Female, length, including tegmina, 4.5 millimeters; male, length, including tegmina, 4.

Yellowish brown; pectus and legs of female brownish ochraceous, with brown tinge on venter and pygofer; those of male greenish ochraceous; tegmina similar to those of *M. basilana*, but the markings finer, the colors similar to *M. basilana*, but size and general conformations similar to those of *M. otanesi*.

Vertex very short, about one-fourth as long as the distance from the center to the eye, greatly produced in front, slightly more than right-angled; anterior side of pronotum greatly produced, median line absent, oblique striation and punctures fine and concolorous, about two-thirds as long as broad, anterior angle concave; scutellum slightly lighter, posterior angle impressed before apex.

LUZON, Laguna Province, Mount Maquiling (type and paratypes, Baker collection, U. S. N. M.).

MACROPSIS DAPITANA sp. nov.

Female, length, including tegmina, 5.5 millimeters.

Vertex short, longer at the side near the eye, middle portion a mere line, olive-brown, regularly punctured; pronotum roundly produced, less than right-angled, about twice as broad as the length, coarsely and regularly punctured; posterior side roundly and gradually concave, scutellum orange-brown, equilaterally triangular, regularly and finely punctured; face roundly tumid, olive-brown; pectus black; legs and venter brown; last abdominal segment trisinate; tegmina olive-brown, venation orange-brownish.

MINDANAO, Zamboanga Province, Dapitan (type and paratypes, Baker collection, U. S. N. M.).

MACROPSIS DAVAOENSIS sp. nov.

Female, length, including tegmina, about 3 millimeters.

Similar in size and shape to *M. mindanaoensis*. Vertex and pronotum greenish ochraceous, fine striation and punctures concolorous, median line indistinct; scutellum yellowish ochraceous with fine brown punctures all over, apical angle with shallow and short impressed suture; tegmina hyaline, sordid brown with profuse brown to fuscous spots; face greenish ochraceous, slightly tumid and finely stippled; pectus, legs, and venter brownish ochraceous with brown markings.

MINDANAO, Davao Province, Davao (type); Lanao Province, Iligan (paratype, Baker collection, U. S. N. M.).

Genus IDIOCERUS Lewis

Idiocerus LEWIS, Trans. Ent. Soc. Lond. 1 (1836) 47.

Idioscopus BAKER, Philip. Journ. Sci. § D 10 (1915) 338.

Type, *I. adustus* H. S., a Palæarctic species.

The head is broad and very short, the vertex merging into the front. The eyes prominent, the elytra long, usually narrowing toward the tip, the body appearing wedge-shaped and the nervures are strong, often being set with tubercles or papillæ alternately. The male antennæ are peculiar in having swollen disc-like portions near the tips of the setæ.—OSBORN and BALL, Proc. Davenport Acad. Nat. Sci. 7 (1898) 124.

According to Osborn,³⁷ "the larvae differ from other tree inhabiting forms in having broad heads and thorax and long slender cylindrical abdomen." They are found most abundant and in swarms during the dry weather from February to April.

Baker³⁸ made *Idiocerus clypealis* Lethierry the type of a new genus *Idioscopus* and included therein two new species, *palawansensis* and *tagalicus*, because, he states, the head is larger, narrower, and longer as seen from above. He says that it is distinctly longer at the middle than at the eyes, that it is long in proportion to width between eyes, and that the first apical and first subapical cells are confluent. The generic characteristics of this species seem to tally exactly with those of *Idiocerus*, as given by Distant from Osborn and Ball.³⁹

IDIOCERUS CLYPEALIS Lethierry.

Idiocerus clypealis LETHIERRY, Journ. As. Soc. Bengal 58 (1889) 252; ATKINSON, Ind. Mus. Notes 4 (1891) 187; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 187.

³⁷ Ohio Biol. Sur. 3 (1928) 209.

³⁸ Philip. Journ. Sci. § D 10 (1915) 317-343.

³⁹ Proc. Davenport Acad. Nat. Sci. 7 (1898) 124.

Idiocerus nigroclypeatus MELICHAR, Hom. Fauna Ceylon (1903) 148, pl. 5, fig. 1, a, b.

Idioscopus clypealis Lethierry, BAKER, Philip. Journ. Sci. § D 10 (1915) 339-340.

Female.—Length, including tegmina, 4 millimeters.

Head, viewed from above, large, broad, and short, the eye exceeding the pronotum, the vertex being only one-half as long as broad from the middle to the eye; apical cells four; anteapical three; tegmina wedge-shaped, longer than the abdomen, being narrowed and folded behind, the exact characteristics for the genus. Distant, however, in describing it, did not state that it is the male that lacks the two spots on the anterior margin of head, a sexual characteristic. Neither did he mention the fact that it is the male that has the immaculate face, and that the female has two small spots on the frons between the eyes, another sexual differentiation.

Distant⁴⁰ stated that the clypeus is flavescent with a central longitudinal black fascia; this feature is also absent. All of my specimens, male and female, have a uniform clypeus. The two spots on the apex of the vertex and the two on the frons are absent in the male.

"Habitat: Bengal, Calcutta, Pusa, Madras, Ceylon, Peradiniya, Colombo." (Distant.)

LUZON, Laguna Province, Los Baños (*Baker*). MINDANAO, Occidental Misamis Province, Oroquieta (*Merino*), on mango. Baker believes that this species occurring in swarms is as injurious to the mango plant as *C. niveosparsa*.

Genus IDIOCERINUS Baker

Idiocerinus BAKER, Philip. Journ. Sci. § D 10 (1915) 241.

Type, *I. melichari* Baker.

This genus was erected by Baker⁴¹ on the form of the frons which, according to him, is different from any other Philippine idiocerine insect. The clypeus is shorter compared to its width than in the other nearly related groups. Perhaps also the absence of the upper cubital branch of the wing veins and the reduction in size of the second apical cell are unique. Other characteristics are typical of *Idiocerus*.

⁴⁰ Fauna Brit. Ind. Rhynch. 4 (1908) 187.

⁴¹ Philip. Journ. Sci. 10 (1915) 241.

IDIOCERINUS BAKERI sp. nov.

Female, length, including tegmina, 4.5 millimeters.

Vertex virescent with olivaceous area on the median occupying two-thirds of the apex; frons and clypeus orange, cheeks and lora ochraceous, clypeus short and wide; pronotum with slightly more than two-thirds of the posterior area testaceous and the anterior third virescent, transversely more than twice as long as the vertex; anterior margin rounded, posterior broadly truncate; scutellum equilateral, longer than the pronotum, testaceous; body beneath and legs ochraceous; last ventral segment truncate; tegmina long, apical cells four, the second outer reduced, upper cubital branch inconspicuous with distinct appendix, claval area olive-green, the rest brown, venation fuscous, a longitudinal fuscous fascia from humeral angle to apical margin, a fuscous patch at margin within the first and second apical cells.

LUZON, Laguna Province, Los Baños (type in my collection).

I am naming this species in honor of the late Prof. Charles Fuller Baker, under whom I did my first field work in entomology.

Genus BYTHOSCOPUS Germar

Bythoscopus GERMAR, Silb. Rev. Ent. 1 (1833) 180; LEWIS, Trans. Ent. Soc. Lond. 1 (1836) 48; FIEBER, Verh. Zool.-Bot. Ges. Wien 18 (1868) 450-456; Rev. Mag. Zool. (3) 3 (1875) 389; KIRKALDY, Ent. 34 (1901) 340; Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 (1906) 345; 3 (1907) 31; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 190; VAN DUZEE, Ottawa Nat. 26 (1912) 69.

Batrachomorphus LEWIS, Trans. Ent. Soc. Lond. 1 (1835) 51; WESTWOOD, Intr. Mod. Cassif. Insects 2 Synop. (1840) 117; KIRKALDY, Ent. 34 (1901) 219 (names *irroratus* type).

Macropsis AMYOT and SERVELLE, Hem. (1843) 585; FIEBER, Verh. Zool.-Bot. Ges. Wien 18 (1868) 449; STÅL, Hem. Afr. 4 (1866) 126; KIRSCHBAUM, Cicad. 5 Wiesbd. (1868) 16; SAHLBERG, Cicad. (1871) 113; FIEBER, Cicad. d'Eur. 1 (1875) 101; MAYER, Tabellen (1884) 26; EDWARDS, Trans. Ent. Soc. Lond. (1886) 104; ASHMEAD, Ent. Am. 5 (1889) 126; VAN DUZEE, Ent. Am. 5 (1889) 165; Trans. Am. Ent. Soc. 21 (1894) 256; BALL, Psyche 9 (1900) 128; OSHANIN, Verz. Palae. Hem. 2 (1906) 67; Kat. Palae. Hem. (1912) 101; DELONG, Tenn. St. Bd. Ent. Bull. 17 (1916) 9.

Stragania STÅL, Rio Jan. Hem. 2 (1862) 49; FOWLER, Biol. Centr. Am. Hom. 2 (1903) 316.

Pachyopsis UHLER, Bull. U. S. Geol. Surv. 3 (1877) 466 (type *lætus* Uhler); ASHMEAD, Ent. Am. 5 (1889) 165.

Gargaropsis FOWLER, Biol. Centr. Am. Hom. 2 (1896) 167.

Type, *B. lanio* Linnæus.

Distribution: Universal.

General appearance broad and robust, head short and bluntly rounded, face broad and short; frons greatly raised from cheeks; pronotum slightly wider than long, coarsely transversely striated, anterior margin rounded, posterior margin slightly concave, almost truncate; posterolaterals oblique, slightly rounded at corners; tegmina moderately long and tapering towards the end, the tip narrow and rounded: venation reticulated or longitudinally punctured.

Distribution: Bengal, Calcutta, Ceylon, Tenassarim.

BYTHOSCOPIUS CHLOROPHANUS Melichar.

Bythoscopus chlorophanus LETHIERRY (*Pachyopsis*), Bull. Soc. Zool. Fr. (1892) 209; MELICHAR, Hom. Fauna Ceylon (1903) 153; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 191, fig. 124; MELICHAR, Notes Leyd. Mus. 35 (1914) 121; OSBORN, Pacific Ent. Pub. 7 (1934) 241.

Male, length, about 4.5 millimeters; female, length, about 5.

Vertex, pronotum, and scutellum light green to stramineous, tegmina greenish ochraceous with piceous spots at end of clavus, face yellowish ochraceous to stramineous, body beneath and legs greenish ochraceous. Vertex narrow and broad, its length about one-sixth the distance between the eyes. Vertex with the eyes narrower than the pronotum; pronotum slightly broader than long, transversely striated, anterior margin rounded, posterior margin almost truncate; scutellum subtriangular, slightly narrower than broad, apical angle impressed with transverse line and separated by an arcuate impressed line, the rest finely punctured; eyes brick red; ocelli nearer to the eyes than to each other, face broad and short, surrounded by short striæ; venation longitudinally punctured.

This species is here reported from the Philippines for the first time.

LUZON, Laguna Province, Los Baños, Mount Banahao: Bataan Province, Mount Limay. MINDANAO. PALAWAN.

Genus CHUNRA Distant

Chunra DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 193; BAKER, Philip. Journ. Sci. § D 10 (1915) 324-326.

Type, *C. puncticosta* Walker.

Distribution: Oriental and Malayan Regions.

Vertex very short and broad, with eyes distinctly broader than pronotum; face narrowed between eyes, the ocelli about as near to each other as to eyes and placed a little below middle of eyes, which are obliquely long and narrow and extend along the lateral margins of the pronotum; pronotum twice as long as vertex, the posterior margin concavely sinuate;

scutellum very long and broad, longer than pronotum and vertex together, transversely impressed before apical area which is moderately raised, the apical margin broadly subacute; legs moderately slender, the posterior tibiæ thickly spinulose, tegmina with the clavus posteriorly broadened to middle and then angularly narrowed to the claval apex, apical areas four, the upper or postcostal area short and moderately broad; wings ample.

—DISTANT, loc. cit.

CHUNRA NIVEOSPARGA Lethierry.

Chunra niveosparsa LETHIERRY, Journ. As. Soc. Bengal 58 (1889) 252; ATKINSON, Ind. Mus. Notes 1 (1889) 5; No. 4 (1891) 187, pl. 12, fig. 6; Journ. As. Soc. Bengal 72 pt. 11 (1903) 7; BAKER, Philip. Journ. Sci. § D 10 (1915) 318; 324-326.

Idiocerus basalis MELICHAR, Hom. Fauna Ceylon (1903) 147.

Idiocerus niveosparsus DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 185, fig. 121.

Female, length, including tegmina, 4.25 millimeters.

Vertex ochraceous with large discal fuscous or olivaceous spots; front, clypeus, lora, and rostrum brown, cheeks ochraceous, ocelli fuscous, located just above the suture of the rounded frons, the distance between them twice the distance between ocelli and eyes; eyes olivaceous; pronotum transverse, about three times as long as length of vertex, rounded anteriorly, the lateral margin oblique and the posterior broadly sinuate, with olivaceous marking posteriorly, anterior margin lighter; scutellum equilateral, bronzy olive, as long as the pronotum, posterior angles light ochraceous, almost white, three spots of similar color above this; tegmina darker bronzy olive, white transversal band from humeral angle to the posterior angle of scutellum, white marking at the posterior tip of the scutellum, and at posterior extremity of costal area; white marking of costal area preceded by fuscous; venation and posterior margin fuscous.

Habitat: Saharanpur, Calcutta, Madras, Bombay Province, Jatalpur, Ceylon, Perademya, Pattipola.—DISTANT, loc. cit.

Baker⁴² reported this insect from the Philippines and other Malayan countries, where it attacks mango flowers in swarms. He disagrees, however, with the description and the illustration of Distant, and places the Philippine species under the genus *Chunra*. Of this species he described three new varieties; namely, *Chunra niveosparsa* Leth. var. *philippinensis*, var. *palawensis*, and var. *lagunensis*.

The species described above from Oroquieta, Mindanao, tallies somewhat with the synopsis for var. *palawensis* Baker. The

⁴² Philip. Journ. Sci. § D 10 (1915) 324-326.

frontoclypeal suture as shown in Distant's figure is not quite visible, moreover the marking on the scutellum is different from that of Distant.⁴³ Baker, however, was apparently in error in the discussion of this species. His citation referred to *Idiocerus niveosparsus* Lethierry, but his discussion was about the genus *Chunra* Distant. The Philippine species, however, is a *Chunra* and not an *Idiocerus*.

This species is associated in the Philippines with *Idiocerus clypealis* Lethierry, which is destructive to mango trees, sucking the juices of the young shoots and the flowers, and causing the latter to wither and fall. Trees severely attacked produce few or no fruits. Mango growers in the Philippines smudge their trees daily long before inflorescence, some during the months of March and April. Spraying with soap solution or with nicotine sulphate just before the mango flower opens has been successful.

These two leaf hoppers are the most pernicious mango pests in the Philippines.

TETTIGONIELLINÆ

This subfamily is easily recognized by the presence of the ocelli on the disk of the vertex, the large and prominent convex face, with long narrow cheeks, and the rounded or obtuse edge of the head.

Distant's synopsis includes eleven genera. Two other genera were described under this subfamily, making thirteen genera in all. I have added *Makilingia* by Baker.⁴⁴ I have followed, in the main, the great work of Distant. The following is a tentative key to the genera considered in this paper:

Key to the Philippine genera of the subfamily Tettigoniellinæ.

- a*¹. Face neither centrally carinate nor foveate.
 - b*¹. Lateral margins of vertex at the central margin of the eyes.
 - c*¹. Vertex not foveate *Cicadella* Latreille.
- a*². Face globose; two carinations united posteriorly on basal area.
 - b*¹. Lateral margins of vertex at the central margin above the eyes.
 - c*¹. Vertex flattish or concave..... *Makilingia* Baker.
 - b*². Lateral margins of vertex at the central margin of the eyes.
 - c*¹. Vertex with a fine central longitudinal carination and an oblique carination on each side of anterior area..... *Mileewa* Distant.

Genus CICADELLA Latreille

Cicadella LATREILLE, in Cuvier, Regne Animal 3 (1817) 406; KIRKALDY, Can. Ent. 39 (1907) 249; VAN DUZEE, Check List Hem. (1916) 66.

⁴³ Fauna Brit. Ind. Rhynch. 4 (1908) 193-194.

⁴⁴ Philip. Journ. Sci. 24 (1924) 57-70.

- Tettigonia* REAUMUR, Memoirs 5 (1740) 150 (pre-Linnean); GEOFFROY, Hist. Abreg. des Ins. 1 (1762) 429, nom. praeocc.
Cicada FABRICIUS, Syst. Ent. (1775) 682 (name cited in error); *Cicada viridis* LINNÆUS, Syst. Nat. 1 (1758) 438.
Ablycephalus CURTIS, Brit. Ent. 1 (1833) 193.
Tettigoniella JACOBI, Zool. Jahrb. 19 (1903) 778, nom. nov.; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 201.

Type, *C. viridis* Linnæus, a Palearctic species.

Vertex anteriorly convexly or subangularly produced, the lateral margins in a line with the inner margins of the eyes; face moderately globose, neither carinate nor foveate, moderately elongate, lateral areas transversely striate; pronotum longer than vertex, the anterior margin more or less convex, posterior margin truncate; scutellum somewhat small, transversely impressed before the apical area; tegmina longer than abdomen, apical areas five; posterior tibiae longly spinulose.—DISTANT, loc. cit.

Most of the specimens in this collection are dark chocolate-brown with ferruginous head and upper third of pronotum; eye pitch black, apex of tegmina dark copper brown; the frons somewhat triangular, about as long as broad between eyes, ferruginous with the middle depressed and slightly streaked with light brown, laterally slightly striated; division of clypeus hardly visible, gena and lora light ochraceous; pectus ochraceous, legs ferruginous, two anterior pairs of tibia and tarsal joints fuscous; venter orange with black band on the anterior halves of every segment; the last ventral segment ochraceous. There is a gradation of color from chocolate to dark brown among the specimens in my collection.

CICADELLA (TETTIGONIA) LONGA Walker.

Male, length, about 13 millimeters; female, length, about 14.

Ferruginous, slender, linear, pale, tawny beneath; head convex in front; face obtuse with a tawny disk; sides of the abdomen luteous; forewings with a black interrupted stripe near the hind border, and another more indistinct in the disk, hind-wings coppery.—WALKER, List. Hom. 11 (1851) 740.

LUZON, Rizal Province, Novaliches: Laguna Province, Los Baños.

According to Distant⁴⁵ this species is synonymous with *C. ferruginea*. However, China in one of his determinations in the Baker collection labeled this species as distinct from *C. ferruginea*.

⁴⁵ Fauna Brit. Ind. Rhynch. 4 (1908) 202-203.

CICADELLA FERRUGINEA Fabricius.

Tettigoniella ferruginea FABRICIUS (*Cicada*), Ent. Syst. 4 (1794) 32; Syst. Rhyng. (1803) 62; GERMAR (*Tettigonea*), Mag. Ent. 4 (1821) 69; SIGNORET, Ann. Soc. Ent. Fr. (1853) 676, pl. 22, fig. 5; WALKER, List Hom. Suppl. (1858) 218; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 98.

Tettigonia apicalis WALKER, List Hom. 3 (1851) 736.

Tettigonia confinis WALKER, List Hom. 3 (1851) 736.

Tettigonia addita WALKER, List Hom. 3 (1851) 737.

Tettigonia gemina WALKER, List Hom. 3 (1851) 737; MELICHAR, Hom. Fauna Ceylon (1903) 155.

Tettigonia obscura WALKER, List Hom. 3 (1851) 738.

Tettigonia duplex WALKER, List Hom. 3 (1851) 738.

Tettigonia reducta WALKER, List Hom. 3 (1851) 739.

Tettigonia immaculata WALKER, List Hom. 3 (1851) 740.

Male, length, including tegmina, about 13 millimeters.

The last ventral segment of the female is deeply sinuate at the middle and roundly angled at the extremities of the lateral side. That of the male is almost truncate, with the anal plates acutely triangular. It almost entirely covers the pygofer. Of the distinguishing characteristics of this species the yellow abdomen with a semicircular black spot at the base of both lateral sides of each segment is unique.

Habitat: India, Burma, Malay Peninsula, Java, Sumatra, Borneo, Philippines, China, and Japan.

LUZON, Manila.

CICADELLA IMPUDICA Signoret.

Tettigonia impudica SIGNORET, Ann. Soc. Ent. III 1 (1853) 132 and 677 (Manila); STÅL, Hem. Ins. Philippinarum 2 (1870) 733; TASCHEBERG, Zeits. Natur 57 (1884) 430 (Siam).

Tettigoniella impudica Signoret, BAKER, Philip. Journ. Sci. § D 4 (1909) 553; 5 (1910) 50 (Palawan).

Female, length, including tegmina, 13 millimeters; male, length, including tegmina, 5.

Reddish brown, slender, linear, head convex in front; face obtuse; frons and clypeus reddish brown; gena and lora grayish brown; frons with reddish orange longitudinal band on the center, dimly laterally and perpendicularly striated; vertex sulcated between eyes and ocelli; eyes fuscous; tegmina long, fuscous, brown at apex; body beneath pectus reddish brown in female and ochraceous in male; venter reddish brown, dorsally black; posterior wings black.

This species is similar to the two preceding species, but is slightly smaller and slenderer and lighter brown. The last ventral segment of the female is obtusely and somewhat roundly pro-

duced with a ridge at the center that is slightly lobed. The anal plates of the male are longer with a long filiform appendage about two-thirds as long as the rest of the plate slightly passing the pygofer; pygofer is more robust and profusely pilose.

Cicadella impudica has been found associated with *C. longa*.

Described by Signoret from a specimen collected in Manila. It is not known from anywhere else.

CICADELLA PHILIPPINA Walker.

Cicadella philippina WALKER, List Hom. Ins. 3 (1851) 740.

Tettigonia philippina SIGNORET, Ann. Soc. Ent. III 1 (1853) 122 and 674, pl. 22, fig. 3; STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 733.

Female, length, including tegmina, 15 millimeters; males, length, including tegmina, 14.

Head, pronotum, and scutellum pitch black; vertex anteriorly rounded and bluntly produced, with a lateral marginal yellow fascia just before each eye, a median marginal fascia extending from the outer part of the vertex forward on to the front; ocelli amber yellow; eyes black, surrounded by a narrow ochraceous line; frons tumid, about one and one-half times as long as broad, margined by black fascia uniting just above the clypeus; frons separated by a compressed black line, hardly discernible; gena and lora yellow; pronotum slightly transverse, slightly broader than long, basal side bluntly rounded, lateral side almost parallel, the marginal somewhat inwardly sinuate, the two lateral yellow markings occupying almost two-thirds of area of the pronotum; scutellum and equilateral triangle with large, median, basal yellow marking; tegmina cherry red to fuscous. In males the commissure region and the costal area margined with black bands. The females with yellow patches as on the basal claval and on the basal costal regions, surrounded by dark fuscous areas, the rest of tegmina brown to cherry red; venation fuscous; body beneath, pectus, and legs ochraceous-brown; abdominal region above black; venter fuscous with ochraceous terminal band on each segment; last ventral segment in female acutely angled on the lateral edges, slightly more acute than in *Cicadella longa*. Anal plates of the male similar to those of *C. longa*, *C. ferruginea*, and *C. impudica*. Female darker than the male ventrally.

The Baker collection from various parts of Mindanao contains a female of the coloration of the male described with specimens collected in Iligan, Kolambugan, and Butuan. Some

of the specimens from Butuan are still darker with lighter areas on the middle extending down to the apices. This is true also of the specimens from Surigao. Some of these have the pronotal markings continuous, while those of the vertex are indistinct.

MINDANAO, Zamboanga Province, Port Banga: Lanao Province, Mumungan (Osborn collection).

CICADELLA SPECTRA (Distant).

- Tettigonia albida* WALKER, List Hom. Insects 3 (1853) 767; SIGNORET, Ann. Soc. Ent. France (1853) pl. 21, fig. 3; STÅL, Hem. Afr. 4 (1866) 117; Öfv. Vet.-Akad. Förh. 27 (1870) 734; KIRKALDY, Entomologist 23 (1900) 294; BREDDIN, Albi. Senah Nat. Ges. 25 (1900) 192; Albi. Naturf. Ges. Halli 24 (1901) 31; MELICHAR, Hom. Fauna Ceylon (1903) 157; Wien. Ent. Zeits. 24 (1905) 29; KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 319; BIERMAN, Notes Leyd. Mus. 29 (1907); 33 (1910) 52 (nec Walker).
Tettigonia regilinea STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 735.
Tettigoniella spectra DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 211-212, fig. 137; MATSUMURA, Insek. Zuckerrohr Formosa (1910) 27; DISTANT, Ins. Transvaal pt. 10 (1910) 233, fig. 41 (South Africa); MELICHAR, Notes Leyd. Mus. 36 (1913) 123 (Java); DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918) 3; FLETCHER, Proc. 3d Ent. Meeting, Pusa (1918) 177; DAMMERMAN, Landbouwdierk. Oost. Ind. (1919) 170; FLETCHER, Proc. 3d Ent. Meeting, Pusa 1 (1920) 274.

The four black spots on the vertex do not appear in Walker's description.

Distant ⁴⁶ gives a new name for *spectra*, and according to him the localities are the following: Calcutta, E. Bengal, Pusa, Nepal, Janakpur, Uagpur, Surat, Bombay, Ceylon, Peradeniya, North Australia, etc. No mention is made of the Philippines. He quotes E. E. Green about this insect, who says, "Makes itself a nuisance, swarming round lamps in the rooms at night," and N. Annandale, "Common at the edge of tanks. It is able to walk." Kirkaldy ⁴⁷ gives us additional records of Queensland, Celebes, and the Philippines, where it is found on sugar cane and various grasses, and Stål ⁴⁸ of Madagascar and West and South Africa.

In the Philippines this species is very common, swarming around lamps during the early part of the rainy season. It has been collected from Luzon to Mindanao.

⁴⁶ Fauna Brit. Ind. Rhynch. 4 (1908) 211.

⁴⁷ Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 319.

⁴⁸ Öfv. Vet.-Akad. Förh. 27 (1870) 734.

CICADELLA WHITEHEADII (Distant).

Tettigoniella whiteheadii DISTANT, Rhynch. Malayana, Rec. Ind. Mus.
11 pt. 1 (1908) 142-143; BAKER, Philip. Journ. Sci. § D 9 (1914)
418, fig. 9.

Female, length, about 11 millimeters.

Greenish pale ochraceous with fuscous venation. Tibiæ and tarsi fuscous; vertex with two black spots on apical margin; one black dot on each lateral margin, and one median angulated spot connected with a narrow black line to the base of the vertex; pronotum rounded in front and slightly concave, the lateral sides oblique, almost as long as broad, a longitudinal median black fascia attenuate on anterior third of pronotum; scutellum small with a longitudinal median fascia, anterior third almost indiscernible; a black margin on each upper claval area bordering commissural line down to tip of clavus; face strongly tumid, with a broad flattened front, lateral sides striated, striæ perpendicular to median parallel lines; tibiæ and tarsi fuscous.

LUZON, Laguna Province, Mount Banahao: Mountain Province, Benguet Subprovince, Mount Santo Tomas (*J. Valdez*; Osborn collection).

CICADELLA DIFFERENTIALIS Baker.

Cicadella diferencialis BAKER, Philip. Journ. Sci. § D 9 (1914) 420.

Female, length, including tegmina, 7.5 millimeters.

Head, pronotum, and scutellum yellowish green. Vertex anteriorly convex, sordidly striated with light brown stria at apex; three black spots on disc, one on middle near base of vertex, and two on lateral margin near basal angle of face; pronotum with a semilunar dark green line on middle upper edge, and three fairly large square green spots on middle part; tegmina with pale fuscous veins; body beneath pale green with yellowish spots at places; legs pale ochraceous; lateral sides of last ventral segment notched, clipped, with middle slightly indented at center.

LUZON, Laguna Province, Los Baños, Mount Banahao: Rizal Province, Alabang (*J. Valdez*): Mountain Province, Baguio (Osborn collection).

CICADELLA BIPUNCTIFRONS Stål.

Cicadella bipunctifrons STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 733-734.

Female, length, including tegmina, about 8 millimeters.

Ochraceous. Vertex rounded, as long as half the distance between the eyes; foveate between eyes and ocelli; with two black

spots on apex of vertex equidistant from each other to eyes and above ocelli; two parallel brown fasciæ running longitudinally from apex down to clavus; frons broad and tumid, ochraceous, faintly striated with short perpendicular lines, one oblique brown marking on each lateral side; ocelli and eyes fuscous; face and clypeus ochraceous; pronotum transverse, basal and lateral sides rounded and margins truncate, four broad brown bands running longitudinally; scutellum triangular, acutely pointed at base, two central pronotal bands split on pronotum, dividing into four parallel longitudinal bands; clavus ochraceous with brown markings projected from head and notal regions, margined from claval suture by a red fascia which is one-third as wide as clavus; tip of tegmina transparent fuscous, rest of tegmina red with fuscous margin; wings fuscous, almost black; body and notal and abdominal dorsal region concolorous with wings; ventral side and legs yellowish ochraceous; last ventral segment with triangular-lobed sides and rounded central margin.

LUZON, Laguna Province, Los Baños (*S. S. Gonzales*), Mount Banahao. MINDANAO, Surigao (*Osborn collection*).

CICADELLA QUINQUENOTATA STÅL.

Cicadella quinquenotata STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 734.

Kolla tripunctifrons BANKS, Philip. Journ. Sci. § D 5 (1910) 52, Palawan.

Length, including tegmina, about 9.25 millimeters.

Uniformly yellowish green. Vertex somewhat anteriorly produced, as long as wide between eyes, with discal black spots, two at apex, and two on margin in front of eyes; ocelli ochraceous-amber; eyes fuscous, with a distinct black spot on the lateral edge; face about one and one-half times as long as broad; frons swollen and somewhat flat on the middle, somewhat striate laterally; clypeus swollen and clearly separated by a suture; cheeks and lora pale pink; pronotum hexagonal, almost as long as broad with a curved transverse groove at anterior fourth, just back of the area of pronotal surface distinctly transversely wrinkled; scutellum small, somewhat wider than long; tegmina pale green to hyaline with brown venation.

One of the specimens has a faint spot on each lateral apex of vertex.

LUZON, Bataan Province, Mount Limay; Laguna Province, Mount Maquiling, Los Baños. MINDANAO, Zamboanga (*Osborn collection*).

CICADELLA ALTICOLA sp. nov.

Length, about 8 millimeters.

Greenish ferruginous. Vertex roundly produced, as long as one-half the width between eyes, greenish brown with a round black marking on apical center; one on each vertical edge, and two on the side below; ocelli equidistant from each other and eyes; margin between eyes and apical center occupied by deeply striated portions which are continuous on each side to margin of frons; frons tumid and flat, on the center marked with fuscous striæ; center greenish brown; cheeks and clypeus greenish ochraceous; pronotum transverse, base slightly rounded, about one-half as long as broad, anterior half with irregular black markings; scutellum triangular with acutely pointed marginal angle, slightly broader than long, third marginal portion with horizontal fovea, and a longitudinal median sulcus dividing it into two parts, each portion with an apical fuscous dot and a lateral broad fuscous stripe; tegmina long with five apical and three anteapical cells, with distinct brown venation, apex distinctly margined. Body underneath greenish ochraceous; legs light brown.

LUZON, Benguet Subprovince, Mount Santo Tomas, Haight's Place, and Mount Polis: Nueva Vizcaya Province, Imugan (type, Osborn collection).

CICADELLA SUTURELLA (Stål).

Tettigonia suturella STÅL, Öfv. Vet.-Akad. Förh. 5 (1855) 192.

Length to tip of tegmina, 5.5 millimeters.

Vertex short, a little longer than one-half length of pronotum, with bluntly rounded apex, amber yellow, two black spots, one in each angle equidistant between the eye and the anterior portion, one on disc and two black spots surrounding the amber-colored ocelli; frons amber yellow with an elongated black spot on upper portion, disc distinctly foveate and marked on the sides by yellow striæ, lora and gena ochraceous; pronotum light yellow with two oblique lines from basal inner third to posterior base, forming an obtuse angle; scutellum amber orange, a transverse line on the middle, with two broken parallel black lines laterally, the continuation of pronotal lines on edges of tegmina forming the commissural lines; tegmina hyaline, with milky white venation, the borders of which are black and fuscous. Body underneath and legs pale yellow; last ventral segment truncate in male, slightly convex in female.

LUZON, Laguna Province, Paete, Los Baños, and Pansol. NEGROS, Occidental Negros Province, Dumaguete. MINDANAO, Zamboanga.

Known host *Acalypha* sp., evidently widely distributed in the Philippines.

CICADELLA NIGRIFASCIATA sp. nov.

Male, length, including tegmina, 5.5 millimeters.

This species has morphological characteristics similar to those of *C. suturella* Stål, of about the same size and general appearance. The marking of this species is more accentuated. There are more spots and markings on the vertex. The notal markings are consolidated into a semicircle, in contradistinction to those of *C. suturella*, which are oblique, meeting at an angle. In males frons and clypeus entirely black, in some there is a black fascia on the middle of the frons and on the lateral margins of the frons and cheeks; fasciæ of frons connected by transverse striæ; scutellum with a longitudinal black marking near each lateral angle and confluent with the commissural black lines terminating at the tip of tegmina. Entire lateral margins of tegmina bordered by a black marking. Thoracic and abdominal sclerites marked partially with black at the middle, with the exception of the genital plates, which are ochraceous. The vertex is rounded, about one-third as long as the distance between the eyes; pronotum transverse, slightly wider than long, basal margin rounded, the lateral sides oblique, and posterior almost truncate; scutellum triangular, posterior half separated by an impressed line; body beneath the wings black; legs stramineous.

This species is abundant on cotton in the Philippines.

LUZON, Mountain Province, Mount Santo Tomas (type), Balaban and Baguio (paratype, Osborn collection).

Genus MILEEWA Distant

Mileewa DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 238; BAKER, Philip. Journ. Sci. § D 9 (1914) 415.

Type, *M. margheritæ* Distant.

According to Distant⁴⁹ this genus is known only from Assam. Baker⁵⁰ described a new species and a new variety of this species from Mount Maquiling, Luzon, and named the species *M. luzonica*.

⁴⁹ Fauna Brit. Ind. Rhynch. 4 (1908) 238.

⁵⁰ Philip. Journ. Sci. § D 9 (1914) 415-416.

MILEEWA LUZONICA Baker.

Mileewa luzonica BAKER, Philip. Journ. Sci. § D 9 (1914) 415-416.

Vertex, pronotum and scutellum ferruginous, the front margin of vertex and all below very pale yellowish, the tegmina washed with a shining ferruginous. A large rectangular spot in middle of vertex, 2 round spots near basal margin of pronotum, a varying and indistinct median area on posterior half of pronotum, lateral angles of scutellum broadly, a narrow longitudinal band on clavus within commissural margin and not reaching tip of clavus, a longitudinal band on corium bordering claval suture and passing into inner apical cell, and a band from base of tegmina passing to apex of first anteapical cell, black; area of apical cells smoky translucent. Length ♂ 4.5, ♀ 4.75 mm.

Length of face two and one-fourth times width between eyes, basal clypeal suture distinct, the whole surface faintly shagreened; front and clypeus strongly convex, the former slightly flattened on disc above. Length of vertex about three-fourths of width between eyes, surface smoothly convex. Ocelli nearly on line of anterior margin of eyes, somewhat nearer to eyes than to each other. Pronotum smooth, the pleural carina very fine but complete. Scutellum wider than long, a fine impressed transverse line at middle. Tegmina opaque proximad of apical cells, but not all coriaceous and not at all punctate. If viewed squarely the hind margin of last ventral segment appears to be slightly incurved and with a median projection, the hind angles oblique; if viewed at a slight angle the hind margin appears to be deeply emarginate.—BAKER, loc. cit.

My specimens were all collected near Los Baños, at the foot of Mount Maquiling. The color of the vertex, pronotum, and scutellum is orange and not ferruginous; the tegmina is of the same color, except the clavus which is greenish yellow; the ocelli are equidistant from each other and from the eyes; and the scutellum is equilateral. The rest of the characters conform to Baker's description of the insect. In the Osborn collection there is a specimen collected at Subaan, Mindoro, and another collected at Haight's Place, northern Luzon. The latter specimen is pale, slightly larger than the rest, and the pronotal markings are quite indiscernible.

Genus MAKILINGIA Baker

Makilingia BAKER, Philip. Journ. Sci. § D 9 (1914) 409-410; 24 (1924) 57-58.

Type, *M. nigra* Baker.

This genus was erected by Baker⁵¹ for a group of small Tetti-goniellinæ colored principally black and red, rarely whitish, collected on Mount Maquiling and Mount Banahao, which later on

⁵¹ Tom. cit. 410-411.

Baker⁵² believed should belong to the subfamily Gyponinæ instead. It is, however, my opinion that *Makilingia* species, having unique characteristics which warrant placing them under a separate genus, are more closely related to the Tettigoniellinæ than to the Gyponinæ, for the following reasons:

The general shape of the head and the body of *Makilingia* appear more like those of *Kolla* of the Tettigoniellinæ than like those of *Bhooria* of the Gyponinæ. It is true that *Bhooria* has a considerable affinity to the Tettigoniellinæ, but due to the structure of the face, Distant⁵³ thought it wise to locate it with the Gyponinæ. It is these peculiar characteristics of the face that separate *Makilingia* from *Bhooria*. The vertex of *Makilingia* is slightly longer than broad, similar to the vertex of *Kolla*, while that of *Bhooria* is much longer than broad, prominently acutely narrowed. It is even as rounded in front as *Bhandara*, of the Tettigoniellinæ. *Kolla* is a Tettigoniellini, closely allied to *Tettigoniella*, but differing by the structure of the vertex, which is subconically narrowed anteriorly and which is also more or less foveate, characteristics of most of the species of *Makilingia*. Again the vertex of *Bhooria* has a central longitudinal ridge, while that of *Makilingia* is sulcate.

In the arrangement and venation of the tegmina *Makilingia* is nearer to *Tettigoniella* than to any other genus. The folding of the anterior wings and the four apical cells and two or three antepical cells are also found in the Tettigoniellinæ.

The elongated and gradually tapering clypeal sclerite is more that of a *Tettigoniella* than of a *Gypona*. It is certainly closer to *Tettigoniella whiteheadii* Distant (Baker⁵⁴) than to *Bhooria modulata* Distant.⁵⁵ The absence of the frontoclypeal suture coupled with the exaltation of the lateral vertical angles over the eyes are the unique and distinguishing characteristics of this genus. The absence of the frontoclypeal suture denotes antiquity of the group. This suture is, however, present in an indiscernible condition in the species *M. pruinosa* Baker which shows the direct line from *Makilingia* to *Tettigoniella* or *Cicadella*. The clypeal structure is more specialized in the Gyponinæ. In *Tettigoniella longa* and allied species, such as *Cicadella philippina* Walker, the clypeal sutures are quite indiscernible. I be-

⁵² Idem 24 (1924) 57.

⁵³ Fauna Brit. Ind. Rhynch. 4 (1908) 256.

⁵⁴ Philip. Journ. Sci. § D 9 (1914) 412-419.

⁵⁵ Fauna Brit. Ind. Rhynch. 4 (1908) 256-257.

lieve that *Makilingia* is an older group with *Tettigoniella* as an intermediate group between it and *Gypona*.

Five species were described in 1914. In 1924 Baker⁵⁶ described ten more species which were collected not only from the mountains of northern Luzon but also from the lowlands and from other islands. However, he believed that this genus is confined to the Philippine Islands.

Small tettigoniellids, colored principally black and red, rarely whitish, with head much narrower than pronotum, anterior margin very shortly sublunate and strongly rounded in front between the eyes. Face rather long and narrow. Basal clypeal suture usually entirely obsolete. Loræ small and narrow. Lateral frontal margins passing close to eyes. Vertex flattish or concave, variously impressed or excavated, and always longer than half width between eyes. Ocelli placed before the line of anterior margins of eyes. Pronotum longer than the vertex, of a sexangular type in form, but anteriorly strongly, quite evenly, and narrowly rounded from the lateral angles to between the eyes, the posterior lateral margins short, the posterior margin gently incurved, the pleural area with a strong complete carina. Scutellum usually large, longer than wide or wider than long, and with an acuminate tip, the posterior area more or less swollen. Tegmina normal in outline or somewhat narrowed distad, with four apical cells and 2 or 3 anteapicals, sometimes with indistinct and irregular cross-veins in the costal area; clavus without cross-veins, its 2 sectors joining the commissure; appendix very short or extending to near tip of inner apical cell. Armature of hind tibia dense and heavy. Sculpturation largely a heavy and conspicuous puncturation.—BAKER, Philip. Journ. Sci. § D 9 (1914) 409-410.

MAKILINGIA NIGRA Baker.

Makilingia nigra BAKER, Philip. Journ. Sci. § D 9 (1914) 411, fig. 1; 24 (1924) 68-69.

This species has all the appearance of a *Kolla*.

Body and tegmina deep black, the legs and two basal antennal articles lemon yellow. Length ♂ 5, ♀ 6 mm.

Length of face twice the width between eyes; basal clypeal suture obsolete; front a little swollen and with disc flattened, transversely impressed above, beneath margin of vertex; front coarsely sparsely punctate on disc, lateral margins and clypeus coarsely shagreened; loræ and genæ with very large confluent punctures. Length of vertex about five-sixths of the width between eyes, its anterior lateral margins slightly bisinuate; surface coarsely sparsely punctate, the entire lateral areas between ocelli and eyes deeply excavated, as is also the anterior median area. Ocelli somewhat in front of anterior line of eyes, and about as far from each other as from eyes. Pronotum coarsely sparsely punctate, and posteriorly with indistinct transverse rugæ. Scutellum wider than long; longer than pronotum.

⁵⁶ Philip. Journ. Sci. 24 (1924) 57-71.

transverse impressed line at middle very strong and medially widened; posterior to impressed line the surface is distinctly longitudinally striolate. Tegmina opaque, coriaceous proximad including the clavus, the entire coriaceous portion strongly sparsely punctate. Last ventral segment of female rectangularly emarginate, the lateral posterior borders strongly curved.—BAKER, Philip. Journ. Sci. § D 9 (1914) 411.

LUZON, Laguna Province, Mount Banahao and Mount Maquililing (type, Baker collection); Batangas Province, Santo Tomas (Osborn collection). NEGROS, Cuernos Mountain. PANAY. MINDANAO, Surigao Province, Surigao. BASILAN.

MAKILINGIA TETTIGONOIDES Baker.

Makilingia tettigonoides BAKER, Philip. Journ. Sci. 24 (1924) 60–61.

Female, length, 8 millimeters. Ochraceous to yellowish; abdomen black with pale segmental margins; tegmina, except costal margins greenish to near apical cross veins, the apices slightly smoky; vertex with four black spots, two marginal near apex, and two surrounding ocelli; on infero-posterior surfaces of eyes, beneath posterior margin of vertex and entirely hidden from view without separating the head from pronotum, are two black spots; pronotum with two black spots just behind eyes; large black spots also occur on basal angles of scutellum; basal lateral angles of front narrowly black.

Front strongly convex, medially shallowly depressed, very faintly shagreened, smooth, shining. Clypeus strongly roundly umbonate basally, with surface like that of front. Genæ and loræ with shallow separated punctures. Vertex strongly depressed before the sharp anterior margin, as usual in this genus, the remainder of surface separated into three portions by low rounded longitudinal prominences along the lines of the ocelli, the lateral concavities much the deeper; the median area minutely and sparsely punctured, the lateral areas wrinkled next eyes. Ocelli large, equidistant from basal and antero-lateral margins of vertex and nearer to eyes than to each other. Pronotum uniformly covered with separated punctures, the interspaces smooth, and transverse rugæ not evident. Tegminal punctures well separated, the interspaces smooth. Genital segment apically broadly, deeply, arcuately emarginate.

Male, length, 7.5 millimeters. Vertex more broadly rounded apically. Color inclining to testaceous (as is sometimes the case in females). Meso- and metasternal sclerites black. Spots of vertex enlarged and variously coalesced. A common type is represented in males from Baguio, though many minor variations of this occur. A male color form from Dapitan shows complete coalescence of the black spots across disk of vertex. Females occasionally have the male type of marking, and one Baguio female is selected which is similar to Dapitan males. The vertex is finely wrinkled anteriorly also, and has two small deep depressions near basal margin. Genital segment as long as broad, roundly swollen, shining black, hind margin nearly truncate except for a short, acute, median projection; base of the long slender plates very broad, undivided, and swollen.—BAKER, loc. cit.

LUZON, Benguet Subprovince, Baguio and Pauai (Haight's Place): Nueva Vizcaya Province, Imugan. MINDANAO, Zamboanga Province, Dapitan (*Baker*).

According to drawings presented by Baker⁵⁷ for this species there are four characteristic groups of markings (Plate 1, fig. 1, *a*). Head ochraceous, vertex with four black spots, two marginal near apex, and two surrounding the ocelli. This variety, according to specimens collected on Mount Polis, Luzon, is light yellow or ochraceous, with two anterior pronotal and two anterior angular markings; two anterior tegminal black markings and two apical vertex markings are confluent with the two marginal apices; the entire face is amber yellow. The variety represented by Plate 1, fig. 1, *b*, head black, and the one with four antero- and three posterovertical yellow markings, two anterior black spots on pronotum and two very conspicuous anterior angular black spots of the scutellum, has entirely black face and the general color of the tegmina is greenish ochraceous. The other, represented by Plate 1, fig. 1, *c*, has head black, vertex with two semitransverse and three posteromarginal ochraceous markings, and two more or less rectangular pronotal black markings just below the eyes, and the upper half of the scutellum black; the frons black, the clypeus castaneous brown; cheeks ochraceous.

Female, 8 millimeters, and male, 7.5, four specimens, three males, two from Mount Polis and one from Baltaiason, Luzon, and one female from Mount Polis, northern Luzon, are available for study. These specimens are uniformly ochraceous and the markings are also uniform. They all conform to Plate 1, fig. 1, *a* (Osborn collection).

One female and one male collected at Santo Tomas, Batangas Province, near Mount Maquiling, also conform to Baker's Plate 1, fig. 1, *b*. These specimens are ochraceous, slightly darker than the above variety.

The markings of the female differ slightly from those in Plate 1, fig. 1, *b*, of Baker, as there is on this specimen a distinct dot on each lateral angle of the vertex just above the anterior edge of the eyes. Also the two ochraceous spots above the ocelli are larger and more confluent. In the male these two spots are enlarged with a projection directed towards the apex of the vertex, and the black markings on the anterior and on the poste-

⁵⁷ Philip. Journ. Sci. 24 (1924) 60-61, pl. 1, fig. 1 *a-d*.

rior sides of the vertex coalesced, just above the inner margins of the eyes.

In specimen *c*, collected at Santo Tomas, Batangas Province, Luzon, the marking on the apical margin of the vertex is cut by two vertical ochraceous lines, so that it appears as three black spots on the apical end. The black markings on the lateral angles of the vertex just above the inner margins of the eyes are almost indiscernible and are not united with the posterior markings. The scutellar spots have coalesced into a band or fascia occupying the anterior portion of the scutellum.

In specimen *d*, collected on Mount Polis, Mountain Province, Luzon, the two anterior markings are separated from the posterior median markings surrounding the ocelli. The anterior pronotal spots as appearing on all of the varietal forms are reduced. All other markings mentioned are also reduced.

There seem to be no definite markings on the vertex, pronotum, or scutellum in this species (*M. tettigonoides*).

All specimens studied are from the Osborn collection.

MAKILINGIA SPECIOSA Baker.

Makilingia speciosa BAKER, Philip. Journ. Sci. 24 (1924) 61-62, pl. 1, fig. 2, *a-f*.

A single specimen collected at Santo Tomas, Batangas Province, Luzon (Osborn collection) is perhaps the largest of the group. It is a female about 10 millimeters long. It is tricolored above, black from head to tip of scutellum, and the area parallel to the costal margin, one-fourth the distance to the base of the tegmina; the following one-eighth is reddish and the rest pale brown; lateral margin of the cheeks, and anterior margin of vertex, and the posterior margin of pronotum as well as the legs and venter are pale brown. Baker states that his specimens, taken in Benguet, Mountain Province, were only four. Although it is the most conspicuous, it is a rare species, he considers.

MAKILINGIA INTERMEDIA Melichar.

Makilingia intermedia MELICHAR, Wiener Ent. Ztg. 40 (1923) 119.

Makilingia variabilis BAKER, Philip. Journ. Sci. 24 (1924) 63-64, pl. 1, figs. 4, 5.

This lone male specimen, 4.75 millimeters long, is the smallest *Makilingia* in the collection. Melichar is credited with having named the species before Baker.⁵⁸

Makilingia intermedia is black with four equidistant brown spots on the extreme anterior part of the vertex; eyes and ocelli

⁵⁸ Idem 27 (1925) 159.

brown; tegmina with a cup-shaped yellow marking at the middle of the clavus, the posterior part or tip of clavus yellow, one yellow dot on the middle margin of corium near the claval suture; base of antennæ and legs yellow; scutellum small, broader than long. Originally described from Trinidad, Mountain Province, Luzon.

LUZON, Mountain Province, Balbalan (Osborn collection).

MAKILINGIA INTERMEDIA Melichar var. **SIMILLIMA** Baker.

Makilingia intermedia Melichar var. *simillima* BAKER, Philip. Journ. Sci. 24 (1924) 63-64.

One female and two males were collected on Mount Polis, northern Luzon (Osborn collection). The female is 5.25 millimeters long and the males about 5.

This variety is somewhat larger than the species *intermedia* Melichar. The tegminal markings are continued on the commissural line, with complete absence of the spot on the corium, the vertex having two marginal spots in the female and none in the male. Other coloration is the same as that of *intermedia* Melichar.

LUZON, Mountain Province, Mount Polis and Baguio; Nueva Vizcaya Province, Imugan. MINDANAO, Zamboanga Province, Dapitan (*Baker*).

MAKILINGIA BANAHAOENSIS Baker.

Makilingia banahaoensis BAKER, Philip. Journ. Sci. 24 (1924) 64-65, pl. 2, figs. 6, 7.

Two males, about 5 millimeters long, one of the variety *montalbanensis*.

Black; vertex with two small reddish apical spots and two large lateral spots. In variety *montalbanensis* each of these lateral spots coalesces with one of the apical spots, forming two lateral bands; clavus with a yellow spot on each lateral angle, claval area from the area adjoining the posterior angle of the scutellum to the tip where commissural line and the claval suture meet yellow; legs and base of antennæ reddish yellow. Dorsal side of insect coarsely punctured.

MINDORO, Saban (Osborn collection).

Previously reported by Baker from Mount Banahao, Laguna Province, and Montalban, Rizal Province, both in Luzon.

MAKILINGIA HAIGHTIANA Baker.

Makilingia haightiana BAKER, Philip. Journ. Sci. 24 (1924) 65.

Female, length, about 8 millimeters.

Black, vertex with two large reddish lateral and one median apical spot, about one and one-fourth as long as the breadth

between the eyes; pronotum and scutellum jet black, coarsely punctured and striated; tegmina black, clavus margined both at commissural line and claval suture; corium and costal margins with ochraceous bands; tip of tegmina cloudy hyaline with fuscous margin; frons with a reddish spot, venter black; legs ochraceous.

LUZON, Benguet Subprovince, Haight's Place (Osborn collection).

MAKILINGIA LINEATA Baker.

Makilingia lineata BAKER, Philip. Journ. Sci. 24 (1924) 65-66, pl. 2, fig. 9.

Female, length, 6 millimeters.

Black; vertex obtusely produced with two large reddish lateral spots occupying two-thirds of the lateral margins; eyes and ocelli orange; tegmina black, coarsely punctured, with reddish commissural lines, with anchorlike curve on upper one-third of the clavus; tip of tegmina smoothly fuscous; legs and the base of the antennæ reddish ochraceous.

LUZON, Nueva Vizcaya Province, Imugan (*Baker*): Benguet Subprovince, Mount Polis (Osborn collection).

MAKILINGIA FLAVIFRONS Melichar.

Makilingia flavifrons MELICHAR, Wiener Ent. Ztg. 40 (1923) 119.

Makilingia bimaculata BAKER, Philip. Journ. Sci. 24 (1924) 67, pl. 2, fig. 12.

Male, length, about 7.5 millimeters.

Black; vertex subacutely pointed with large yellow lateral spots; pronotum, scutellum, and tegmina, except the tips, black, coarsely punctured all over, eyes and whole front yellow, legs yellow; venter yellow with median black markings.

LUZON, Benguet Subprovince, Baguio; Ifugao Subprovince, Mount Polis (Osborn collection): Nueva Vizcaya Province, Imugan. MINDANAO, Zamboanga Province, Dapitan (*Baker*).

MAKILINGIA PALLIDA Baker.

Makilingia pallida BAKER, Philip. Journ. Sci. § D 9 (1914) 414-415, fig. 5; 24 (1924) 68.

Female, length, about 5 millimeters.

Body pale ochraceous; tegmina milky white with smoky brown margins at the tip; vertex rounded, about as long as the breadth between the eyes; two-thirds of lateral sides sulcate; eyes and ocelli ochraceous to fuscous, ocelli surrounded by a black margin; two black spots, one on each posterior angle of vertex, next to eyes; vertex, pronotum, scutellum, and anterior half of tegmina

sparsely punctured and the apical half smooth and somewhat transparent. Crown almost flat and square; frons almost rectangular and about twice as long as the breadth between the eyes. Last ventral segment sinuate at posterior middle and with black markings.

LUZON, Laguna Province, Mount Maquiling (type), Los Baños: Tayabas Province, Malinao: Benguet Subprovince, Baguio (var. *benguetensis* (Baker collection)).

MAKILINGIA MACULATA Baker.

Makilingia maculata BAKER, Philip. Journ. Sci. § D 9 (1914) 412-413, fig. 3; 24 (1924) 62.

Female, length, about 5.75 millimeters.

Black; vertex somewhat triangular, somewhat pointed, about two-thirds as long as breadth between eyes, shallowly concave, with four yellow markings on lateral margins; eyes and ocelli fuscous, frons twice as long as breadth between eyes, clypeal suture obsolete; pronotum distinctly rounded in front, transverse coarsely and sparsely punctured, posterior margin almost truncate; humeral angles pointed; scutellum small, nearly smooth; tegmina black and coarsely punctured, posterior two-thirds of lateral sides of clavus margined with greenish yellow markings, center costal margin ochraceous, tip of tegmina fuscous; legs and base of antennæ yellow, body black beneath.

LUZON, Batangas Province, Santo Tomas (Osborn collection): Laguna Province, Mount Banahao, Mount Maquiling, and Los Baños: Tayabas Province, Malinao. MINDORO, Surigao Province, Surigao: Zamboanga. BASILAN and SIBUYAN (Baker collection).

MAKILINGIA PRUINOSA Baker.

Makilingia pruinosa BAKER, Philip. Journ. Sci. § D 9 (1914) 412; 24 (1924) 68.

Length, about 6.5 millimeters.

Long and slender, tegmina narrow and overlapped at tips. Black, except legs, base of antennæ, and eyes, which are brown to fuscous. Vertex slightly produced, pointed, with four yellow markings, two at the apex and two on lateral sides adjoining eyes; frons coarsely striated; frons to clypeal suture distinctly visible; pronotum anteriorly rounded, lateral angles pointed, posterior margin sinuate, coarsely and sparsely punctured; scutellum very small; tegmina sparsely punctured, apices of clavus and corium fuscous.

LUZON, Batangas Province, Santo Tomas (Osborn collection): Laguna Province, Mount Maquiling, Mount Banahao: Mountain

Province, Baguio: Nueva Vizcaya Province, Imugan. MINDANAO, Zamboanga Province, Dapitan (Baker collection).

MAKILINGIA COLORATA Baker.

Makilingia colorata BAKER, Philip. Journ. Sci. § D 9 (1914) 412-413, fig. 3; 24 (1924) 62.

Female, length, about 5.5 millimeters.

Vertex with six coalescing reddish yellow spots forming a marginal border from the posterior margin to two-thirds side of vertex, and one similar spot on middle of posterior margin; anterior side of face with yellow marginal stripe; base of antennæ yellow; frons and clypeus black, suture between them obsolete, together they are about three times as long as space between the underpart of eyes; rostrum and femora pale ochraceous, front femora with three black markings, tibia reddish; prosternal and metasternal episternum black. Venter ochraceous, the last ventral segment deeply sinuated, middle part black; tegmina reddish brown.

LUZON, Laguna Province, Los Baños (Merino collection): Tayabas Province, Malinao: Mountain Province, Haight's Place. NEGROS, Occidental Negros Province, Cuernos de Negros. MINDANAO, Agusan Province, Butuan: Surigao Province, Dapa (Osborn collection).

GYPONINÆ

Ocelli on the disc as in the Tettigoniellinæ, but the face flat or slightly convex, and the body decidedly flattened dorsoventrally.

There are two divisions of cicadellids in this subfamily: *Penthimiaria*, with a short vertex, considerably broader than long, transversely rounded anteriorly, and not produced; and *Hyliaria*, with the vertex not broader than long, and more or less angularly produced.

According to this arrangement the genus *Thaumatoscopus* Kirkaldy, represented by a new species, *roxasi*, herein described, fits very well in the division *Penthimiaria* with the other two species studied, *Penthimia hemifuscata* sp. nov. and *Neordatus acephaloides* Melichar.

Key to the genera of the division Penthimiaria.

*a*¹. Scutellum longer than vertex, its basal margin considerably longer than lateral margin.

*b*¹. Length of vertex equal to about one-half breadth between eyes, short, transverse, anteriorly convexly rounded and depressed.

Penthimia Germar.

b². Length of vertex equal to about two-thirds breadth between eyes, subelongate, anteriorly obliquely rounded and reflexed.

Neodartus Melichar.

a². Scutellum shorter than the vertex, its basal margin only slightly longer than the lateral margin..... *Thaumatoscopus* Kirkaldy.

Genus PENTHIMIA Germar

Penthimia GERMAR, Mag. Ent. 4 (1821) 46; STÅL, Hem. Afr. 4 (1866) 107; FIEBER, Rev. Mag. Zool. 3 (1875) 392; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 112; VAN DUZEE, Trans. Am. Ent. Soc. 21 (1894) 287; MELICHAR, Hom. Fauna Ceylon (1903) 161; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 241.

Type, *P. atra* Fabricius, a Palæarctic species.

Distribution: Nearctic, Palæarctic, Ethiopian, Oriental, and Australian Regions.

Body ovate, compact; head short, broad, narrower than pronotum, rounded anteriorly; vertex sloping anteriorly, equal to one-half the breadth between eyes; pronotum large, transverse, and faintly, transversely striated, sloping towards the front, rounded anteriorly; tegmina short with enlarged appendix, inclined posteriorly from the truncated apex of clavus, femora compressed posteriorly and hind tibia strongly spinose.

PENTHIMIA HEMIFUSCATA sp. nov.

Length, 5 millimeters.

Vertex ochraceous, profusely spotted with fuscous markings; pronotum transverse, ochraceous; vertex broader than long; ochraceous with fuscous markings, an impressed line on the anterior half; upper half of tegmina ochraceous, sparsely spotted with fuscous markings at the humeral angle, posterior half profusely spotted with fuscous markings, apex ochraceous with exception of inner apical cell and appendix which are partially and horizontally marked with short fuscous lines; face black; hind legs black, tibial spurs ochraceous; pectus, venter, and legs fuscous with ochraceous markings.

LUZON, Mountain Province, Mount Santo Tomas (type, Osborn collection).

Genus NEODARTUS Melichar

Neodartus MELICHAR, Hom. Fauna Ceylon (1903) 162.

Type, *N. acocephaloides* Melichar.

Distribution: Oriental Region.

Vertex about two-thirds as long as the breadth between the eyes, broad, obtuse, slightly sloping towards the front, the apex being slightly reflexed; ocelli nearer to the eyes than to each other; pronotum transverse, anterior margin strongly rounded,

posterior broadly concave, almost truncate; scutellum transverse; tegmina broad and short, posteriorly inclined from truncated apex of clavus. The appendix is well developed, as in *Penthimia*, to which this genus is most closely allied.

NEODARTUS ACOCEPHALOIDES Melichar.

Neodartus acocephaloides MELICHAR, Hom. Fauna Ceylon (1903) 163;
DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 246, fig. 155.

The characteristics of the specimen at hand more or less tally with Distant's description,⁵⁹ which has been changed here to fit more accurately the Philippine specimen.

Length, including tegmina, 4 millimeters.

Vertex, pronotum, and scutellum black; pronotum margined exteriorly with faint white stripe, scutellum with two white spots on each lateral side and one on the middle of the anterior margin; tegmina black, with thick ochraceous spots, the apex smoky gray where the veins are fuscous and preceded by an irregular transverse series of four white spots, clavus with a series of four irregular spots and middle of costal region with a large white spot; femora and pectus black, tibia and venter paler, spotted with black; pronotum finely, transversely wrinkled, scutellum very finely, transversely striate, a transverse impression before apical area, anterior middle third with pubescence, apical margin of clavus distinctly incrassate; posterior tibia strongly spinulose, the spines ochraceous.

Hitherto known only in the Punjab, Calcutta, Ceylon, Peradeniya, Negombo.

LUZON, Benguet Subprovince, Mount Santo Tomas (Osborn collection). The species is here reported for the first time from the Philippines.

Genus THAUMATOSCOPUS Kirkaldy

Thaumatoscopus KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc.
Bull. 1 pt. 9 (1906) 422.

Type, *T. galeatus* Kirkaldy, an Australian species.

This genus is closely related to *Penthimia*. The head is more produced and the vertex has a thin border anteriorly; ocelli small, discal just above anterior margin of eyes; pronotum transverse, shorter than vertex or scutellum; vertex roughly shagreened; pronotum and scutellum coarsely striate; tegmina short and broad; scutellum apically truncate, just as in *Penthimia* and *Neodartus*.

⁵⁹ Fauna Brit. Ind. Rhynch. 4 (1908) 246.

Kirkaldy⁶⁰ erected this genus for a species collected in Queensland, Australia, by Koebele and Perkins (1904 or 1905).

THAUMATOSCOPUS ROXASI sp. nov.

Male, length, including tegmina, 7 millimeters; width, 3.

Fuscous above, piceous below. The face below and the prosternum and mesosternum piceous; the hind legs fuscous; vertex slightly convex, roundly produced, one and one-half times as long as broad, greatly depressed, margined by a narrow brown band, rim slightly produced above the upper margin of eyes, middle rufous from base to two-thirds the distance from middle to the eyes, and ascending upward protruding towards the median line; eyes almost piceous, fuscous in female; upper half of face inflexed and flat, piceous, gena separated from lora by a ridge; clypeus small, almost oblong; frons greatly depressed, upper fourth narrow; cheeks broad, foliaceous, thinly produced; pronotum transverse, anterior and lateral sides rounded, oblique; lateral sides truncate, posterior side distinctly concave, rounded dorsally, greatly inclined anteriorly; scutellum small, slightly broader than long, transversely divided by a suture on the middle, this being the highest level so that the insect has a humped appearance; tegmina broad, rounded at the apex, areoles with lighter color, wing veins in male piceous above and fuscous at the ends; ends, vertex, pronotum, scutellum, and tegmina roughly and coarsely shagreened; hind legs extraordinarily developed, depressed, armed with large spurs. The flat and rounded shape, the foliaceous vertex curved downward, the impressed mouth parts, and the dark coloration seem to indicate that this insect is a ground type. It is possible that this species feeds on roots of plants, but our specimen was collected from shrubbery.

LUZON, Rizal Province, Alabang (type in my collection).

I am naming this peculiar and uncommon insect for Dr. Manuel L. Roxas, former director of the Bureau of Plant Industry and former under secretary of the Philippine Department of Agriculture and Commerce, in appreciation of his great interest in entomological development for the benefit of agriculture.

THAUMATOSCOPUS REFLEXUS Stål.

Penthimia reflexa STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 738.

Female, about 8.5 millimeters.

Species lighter and slightly larger than *roxasi*. Ferruginous all over except the face, prosternum, and mesosternum, which

⁶⁰ Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 422.

are black; hind femora and tibia fuscous, vertex foliaceous, rounded, slightly longer than width between eyes, apex slightly reflexed, lateral edges above line of eyes; ocelli quite inconspicuous, on middle of vertex; eyes relatively small; pronotum transverse, distinctly hexagonal, shorter than vertex, anterior side rounded, posterior concave, lateral sides parallel, posterior angles truncate, finely, transversely striated; scutellum slightly broader than long; tegmina coriaceous, small portion of posterior part somewhat transparent, wing veins fuscous.

Stål does not give the distribution of this insect. The type was a Philippine specimen.

LUZON, Manila (*J. Valdez*).

JASSINÆ (including ACOCEPHALINÆ)

The Acocephalinæ are regarded as a distinct subfamily by many authors, as a separate family by some, and as merely a tribe or even a genus by others.

The reason for this simplification or union of the two subfamilies is the difficulty of separating them on the basis of the location of the ocelli. Distant⁶¹ said that *Xestocephalus*, placed by Van Duzee, its founder, in the Acocephalinæ, is placed by Melichar and Matsumura in the Jassinæ. *Hecalus*, which is included by Stål, its founder, in the Acocephalinæ, is considered a member of the Jassinæ by Van Duzee. The main distinguishing feature of the two is as follows:

Ocelli placed superiorly close to the anterior edge of the head.

Acocephalinæ.

Ocelli on the anterior edge of the head or wanting..... *Jassinæ*.

Distant included the genera belonging to the Acocephalinæ in his synopsis of the Jassinæ. The following is a tentative key for the groups or divisions of the Jassinæ-Acocephalinæ based on characteristics given by Distant:

Key to the divisions of the Jassinæ and the Acocephalinæ.

*a*¹. Face not strongly impressed across base.

*b*¹. Body depressed, vertex flatly produced..... *Hecalusaria*.

*b*². Body not depressed.

*c*¹. Vertex produced beyond eyes; lateral margins of vertex not ridged, obliquely narrowed basally at inner margins..... *Jassusaria*.

*c*². Vertex shorter than breadth between eyes, not produced, one-half as long as breadth between eyes, rounded anteriorly.

Selenocephalaria.

*c*³. Vertex about, or more than three times as long as distance between eyes *Tartessusaria*.

⁶¹ Fauna Brit. Ind. Rhynch. 4 (1908) 265-266.

- c⁴. Vertex one-half or less than one-half as long as distance between eyes; lateral margins not so narrowed.
- d¹. Anterior margin of vertex roundly produced, wider than long at middle *Cicadularia*.
- d². Anterior margin acutely or subacutely produced; face longer than broad at base..... *Thamnotettixaria*.
- c⁵. Vertex more or less angularly produced in front of eyes; face not longer than broad at base..... *Athysanusaria*.
- c⁶. Vertex as long as or longer than breadth between eyes; tegmina usually covering dorsum of abdomen..... *Deltocephalusaria*.

Division HECALUSARIA

The general characteristics for this division are the depressed body, the more or less flatly produced vertex, and the placement of the ocelli on the apical margin of the vertex near the eyes. The following key to the genera is from Distant's synopsis of the division: ⁶²

Key to the Philippine genera of the division Hecalusaria.

- a¹. Vertex not prominently angulate in front.
- b¹. Tegmina with five apical cells..... *Hecalus* Stål.
- b². Tegmina with about six posterior discoidal areolets or cells.
..... *Thomsoniella* Signoret.
- a². Vertex twice as long as pronotum; face about three times the length of clypeus, tegmina with four apical cells, lateral margins of face convex *Nirvana* Kirkaldy.

Genus HECALUS Stål

Hecalus STÅL, Ann. Soc. Ent. Fr. (1864) 65.

Glossocratus FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 502.

Type, *H. paykulli* Stål.

Distribution: Neartic, Oriental, Australasian, and Ethiopian Regions. (Probably widely distributed.)

Body oblong or elongate, depressed; head somewhat so, produced apical margin acute, more or less broadly foliaceous; front dilated, somewhat deeply sinuate below the eyes; face a little convex; eyes small or moderate; ocelli placed on the apical margin of the head at or near the eyes; pronotum transverse, very obtusely rounded at apex; scutellum triangular, a little broader than long; tegmina almost as long as abdomen, margined at apex, valvate behind the clavus, with five apical cells; legs moderate; posterior tibiæ very spinose.—STÅL, cited by DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 273-274.

HECALUS GRAMINEUS sp. nov.

Length, including tegmina, 7 millimeters.

Grass green all over. Vertex about as long as breadth between eyes, or slightly longer; margined by two reddish brown

⁶² Tom. cit. 273.

lines, one passing just above the edge and the other below, both crossing eyes longitudinally; eyes ochraceous with two longitudinal red lines; ocelli ochraceous, located on edge of vertex, just above eyes; face tumid, cheeks slightly inflexed just below eyes; pronotum transverse, about twice as broad as long, anterior margin slightly rounded, posterior slightly concave, lateral sides parallel; scutellum about one and one-half times as broad as long, an almost indiscernible ochraceous square at the center, a horizontal curved groove at apical third; tegmina not reaching tip of abdomen, two small black spots on posterior angles of clavus; last ventral segment shallowly bisinuate, almost truncate; genital parts green, except ovipositor, which is pink.

LUZON, Manila (*F. Q. Otanes*; type in my collection).

HECALUS CAPITATUS Distant.

Hecalus capitatus DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918) 30.

Male, length, including tegmina, 8.5 millimeters.

Dirty ochraceous; vertex flat, impressed, and anterior margins slightly inflexed, continuously spotted with fuscous markings along border, profusely, finely punctured with brown specks, except a longitudinal, carinate, ochraceous median fascia, as long as breadth between eyes; face impressed across base, flat, sparsely marked; frons, cheeks, clypeus, and lora slightly tumid, frons broader at base, gradually tapering, clypeus oblong, body beneath including legs punctured or with brown markings, two profuse markings above eyes; pronotum transverse, about twice as broad as long, anterior margin almost truncate, posterior broadly sinuate, sparsely and slightly marked with minute punctures; scutellum about one and one-half times as broad as long, with a median, longitudinal, light brown band, and four horizontal, median, light brown spots, posterior angle acute and with curved impression on upper third; tegmina broad, posterior margin rounded, sparsely and irregularly marked with brown markings, wing veins amber color; eyes fuscous; ocelli ochraceous above eyes, surrounded by brown spots.

LUZON, Laguna Province, Los Baños (*S. Gonzales*). NEGROS, Occidental Negros Province, Victoria (*Baker*).

Originally described from northern Bengal. This species is here reported from the Philippines for the first time.

Genus THOMSONIELLA Signoret

Thomsonia SIGNORET, Ann. Soc. Ent. Fr. (1879) 51.

Thomsoniella SIGNORET, Ann. Soc. Ent. Fr. (1880) 52; MELICHAR, Hom. Fauna Ceylon (1903) 171; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 277-278.

Type, *T. porrecta* Walker.

The original name *Thomsonia* was changed to *Thomsoniella*, because *Thomsonia* had been used in the Crustacea. This genus is close to *Hecalus*, from which it is separated by having six discoidal areolæ and the following characteristics:

Body depressed; head prolonged in front, foliaceous on the anterior margin of the vertex, with a groove throughout its entire length, vertex depressed, also the frons, the latter with the grooves and lateral sutures extending to the anterior border of the head; gena sinuate, rounded in the middle, the lora occupying the entire space between the margin of the genæ and the frontal suture; sides of clypeus almost parallel, rounded at the tip, one and a half times longer than broad; pronotum transverse, almost broader than the head including the eyes; tegmina hyaline with a narrow marginal limbus.—SIGNORET, Ann. Soc. Ent. Fr. (1879) 51.

THOMSONIELLA PORRECTA Walker.

Thomsoniella porrecta WALKER (*Acocephalus*), List Hom. Suppl. (1858) 262; MELICHAR (*Thomsoniella*) part., Hom. Fauna Ceylon (1903) 173; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 278–279, fig. 178; BIERMAN, Notes Leyd. Mus. 3 (1913) 61, Java; DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918) 31; BAKER, unpublished notes. *Platymetopius lineolatus* MOTSCH., Etud. Ent. 8 (1859) 114; KIRKALDY (*Thomsonia*), Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 337.

Hecalus kirschbaumii STÅL, Öfv. Vet.-Akad. Förh. (1870) 737; SIGNORET (*Thomsoniella*), Ann. Soc. Ent. Fr. (1880) 52, pl. 1, fig. 4; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 104.

Length, including ovipositor, 6.5 millimeters.

Pale ochraceous or greenish ochraceous, with small spot at the apex of clavus and another on the middle of the first apical area black; anterior margin of vertex usually blackish; some obscure longitudinal orange-red fasciæ which are sometimes obsolete, in other specimens visible as in the one here figured, these fasciæ number when fully discernible four on vertex, six on pronotum, and three on scutellum; vertex considerably shorter than breadth between eyes, its anterior margin distinctly reflexed, ocelli in groove very close to the eyes.—DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 278–281.

Habitat: Calcutta, Ceylon, Pusa, Peradeniya, Negombo, Burma, Maldive Islands, Queensland, Philippines.

THOMSONIELLA ALBOMACULATA Distant.

Thomsoniella albomaculata DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 280–281.

Length of male, including tegmina, 5 millimeters.

Pale ochraceous or greenish-ochraceous; apical areas of tegmina brownish with white spots; vertex of head with the lateral and apical margins somewhat strongly reflexed, extreme apical edge piceous; pronotum finely trans-

versely striate; scutellum with an angulate line before the apical area; in some specimens as the one here figured there are two darker basal spots, but generally these are obsolete; abdomen above black, the lateral margins somewhat broadly ochraceous and inwardly angulated, a sub-apical narrow greyish transverse fascia, the anal segment castaneous.—Distant, tom. cit., 281.

Originally known only in eastern Bengal, Calcutta, and Ceylon.

LUZON, Rizal Province, Alabang: Laguna Province, Los Baños (J. Valdez, in my collection).

This is the first Philippine record for this species. Apparently very common around Manila. Some of the specimens are parasitized by a dryinid.

Genus NIRVANA Kirkaldy

Nirvana KIRKALDY, Ent. 33 (1900) 293; MELICHAR, Hom. Fauna Ceylon (1903) 165; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 281.

Type, *N. pseudommatus* Kirkaldy.

Distant⁶³ places the members of this genus under the division Hecalusaria. Kirkaldy⁶⁴ founded this genus in 1900, which he states may be placed provisionally near the American genus *Spangbergiella* Signoret, a genus allied to *Hecalus* under Jassinæ. However, later on Kirkaldy⁶⁵ changed his opinion and placed it under the genus *Eupterigine*, which belongs to the Typhlocybinæ. Baker⁶⁶ has raised this genus to the category of a family, separated into three subfamilies mainly according to the position of the antennæ; namely, Macroceriinæ, Nirvaniinæ, and Stenometopiinæ. The Macroceratogoniinæ include the genera *Macroceratogonia* Kirkaldy, *Balbilus* Distant, and *Stenotortor*, a new genus erected by Baker, the characteristics of which were based upon the more highly specialized *Balbilus*. The type species is *Stenotortor inocarpi* Baker, collected in Singapore, Straits Settlements, on *Inocarpus edulis*, the Otaheite chestnut, supposed to have been introduced from Polynesia.

The Stenometopiinæ take in one genus, *Stenometopius* Matsumura, with the species *S. formosanus* Matsumura and *S. mindanaensis* Baker. Baker believed that this genus may be represented in the islands between Formosa and Mindanao.

The Nirvaniinæ take in *Didius* Distant, which is provisionally placed in this subfamily by Baker, *Kana* Distant, *Nirvana* Kir-

⁶³ Tom. cit. (1908) 281 and 299.

⁶⁴ Ent. 33 (1900) 293.

⁶⁵ Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 3 (1907) 68.

⁶⁶ Philip. Journ. Sci. 23 (1923) 345-401.

kaldy, *Ophiuchus* Distant, and the four genera separated by him; namely, *Pseudonirvana*, *Nirvanoides*, *Pythonnirvana*, and *Jassonirvana*. These separations were based largely on the shape and characteristic sculptures of the vertex, on the position of the ocelli on the varying points of the crown, accompanied by peculiar surrounding structures, and in many cases the sizes and shapes of the tegminal cells.

In Baker's⁶⁷ synopsis the vertex of *Kana* is as long as or usually shorter than the antecular width, which did not tally with any species. It should have been relatively shorter than the vertex of *Nirvana*. I have examined the species of *Kana* and found them to have the vertex longer than the distance between the eyes, tallying with Distant's synopsis which gives the face slightly longer than broad.

NIRVANA PHILIPPINENSIS Baker.

Nirvana philippinensis BAKER, Philip. Journ. Sci. 23 (1923) 385-386, pl. 4, fig. 31.

Length, including tegmina, 5 millimeters.

Very pale ochraceous; the delicate complete median carina of vertex is black, and a median stripe a little paler in color continuous across the pronotum and scutellum, and in some specimens the full length of claval commissure; ocellus seated in an orange spot. Tegmina milky translucent, three oblique fuscous stripes over the corresponding cross veins in apical half of subcostal area; a large orange spot covers apical portions of radial and medial areas; apical sugmargin fuscous, this extending into outer apical cell; a large round black spot at base of second apical cell; extreme apex of clavus fuscous. Length, female, 5 mm; male, 4.25 mm.—BAKER, loc. cit.

Baker's specimens were from Mount Maquiling, Luzon; and Dapitan, Zamboanga, Lanao, and Surigao, Mindanao.

LUZON, Laguna Province, Los Baños, Mount Banahao: Rizal Province, Alabang. NEGROS, Occidental Negros Province, La Carlota. The specimens were compared with the type in the United States National Museum. It is evident that this species is well distributed.

Division SELENOCEPHALARIA

The general characteristics of the species belonging to this division are as follows: Vertex short, about one-half as long as distance between the eyes, more or less rounded anteriorly, the ocelli near the anterior margin of the eye and near the eyes.

⁶⁷ Tom. cit. 379.

The following key may serve to separate the genera determined in this paper:

Key to the Philippine genera of the division Selenocephalaria.

- a*¹. Veins of tegmina very distinctly brown-margined, the cellular areas pronounced, the frons more or less rounded; vertex not apically transversely sulcate, the apical margin more or less reflexed and ridged.

Paramesus Fieber.

- a*². Veins of tegmina very distinct and cellular areas not all brown-margined, frons more or less elongated.

- b*¹. Vertex moderately transversely sulcate near apex and ridged at the edge, more than one-half as long as width between eyes, ovipositor and pygofer short and stout..... *Roxasella* gen. nov.

- b*². Vertex moderately transversely sulcate near apex and ridged at the edge, more than one-fourth as long as width between eyes, ovipositor and pygofers more or less long and slender.

Omanella gen. nov.

- a*³. Veins of tegmina normal, claval veins not connected, apical areas of tegmina reticularly veined.

- b*¹. Vertex almost as long as width between eyes, body elongated and slender, wings very much longer and tapering.

Parabolocratus Uhler.

- b*². Vertex moderately transversely sulcate near apex and ridged at the edge, one-half as long as width between eyes..... *Krisna* Kirkaldy.

Genus *PARAMESUS* Fieber

Paramesus FIEBER, Verh. Zool-Bot. Ges. Wien 16 (1866) 506.

Type, *P. nervosus* Fall., a Palæarctic species.

Distribution: Nearctic, Palæarctic, and Oriental Regions.

Margin of vertex linear, ridged above and below margin with short fine transverse wrinkles parallel to margin, hollowed out on the upper surface, the margin of vertex consequently somewhat raised; the whole face very finely shagreened; clypeus somewhat long, gradually widened to apex, almost spatulate, "Zügel," not extending to end of clypeus, cheeks and middle of the sides very obtusely angulated, almost round; pronotum in front very flatly curved; face to vertex on ridge nearly subright-angularly obtuse, to the clypeus suddenly narrowed; ocelli on the ridge of vertex near the eyes; veins of tegmina distinct, the brown bordering of the veins strongly pronounced, the inner forked branch of first sector connected with the internal vein by two transverse veins so that there are two discal cells, three middle cells and five terminal cells are also formed; no marginal appendage. Direction of veins in tegmina as in *Selenocephalus*.—MELICHAR, cited by DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 293.

PARAMESUS LINEATICOLLIS Distant.

Paramesus lineaticollis DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 294, fig. 186.

Length, 5 to 6 millimeters.

Vertex, pronotum and scutellum ochraceous; vertex with an arcuated transverse black fascia between the eyes, behind the fascia is a short

medial incised dark line extending to base; pronotum with five longitudinal narrow fasciæ, the central narrowest and darkest, those on each side paler, broader and more brownish in hue; body beneath and legs pale ochraceous; face transversely brownly striate, medially longitudinally palely interrupted, on each side of clypeus a pale elongate spot outwardly margined with black; abdomen beneath with a marginal series of small piceous spots; posterior tibiæ streaked and spotted with piceous; tegmina dull pale ochraceous, the veins very prominent and much paler, a central prominent discal brown spot sometimes preceded nearer base by one or two smaller and linear dark spots; vertex short, transverse, rounded anteriorly, about three times as broad as long; face sub-convex; tibiæ longly spinulose.—DISTANT, loc. cit.

LUZON, Rizal Province, Alabang (Merino collection): Nueva Vizcaya Province, Bayombong. BASILAN (Osborn collection).

This species was originally described by Distant from Bengal, and is now reported for the first time from the Philippines where it may be of wide distribution.

Genus ROXASELLA novum

Type, *R. camusi* sp. nov.

Body oblong; vertex produced in front, slightly longer than one-half the distance between eyes, flat, finely diagonally striated; face dilated, depressed at base, antennæ located in impressions at base of cheek between eyes and space below base of frons; ocelli situated at apex of vertex, close to eyes and above the sulcated area of antennal base; pronotum transverse, distinctly quadrilateral, anterior margin rounded, slightly produced to between eyes, sides short and oblique; posterior margin slightly arcuated, two-thirds of posterior area roughly striated, anterior third slightly irregularly elevated; scutellum triangular, slightly broader than long; tegmina extending beyond tip of abdomen, venation similar to that of *Selenocephalus*. Closely related to *Selenocephalus*, differing mainly in shape of vertex, which in *Selenocephalus* is broadly rounded at the apex, and about one-half as long as half of distance between eyes, and the shape of pronotum which is rounded on anterior margin, and slightly more arcuated at posterior margin, and with the shallower excavation of cheek at base of antennæ.

LUZON, Laguna Province, Mount Maquiling. There are specimens of this genus in the Baker collection from Borneo and Singapore.

This genus is erected in honor of Dr. Manuel L. Roxas, chairman of the National Research Council, because of his interest in insect control.

ROXASELLA CAMUSI sp. nov.

Female, length, about 7.25 millimeters; male, length, about 7.

Vertex brown, with a narrow ochraceous band at extreme anterior margin, preceded by a fuscous band two and two-thirds times as long as distance between the eyes; ocelli at apex of vertex just above and close to eyes; eyes fuscous; face ochraceous; base of frons rounded with fuscous band, a deep excavated part above cheek, between base of frons and eyes, where antennae are located, clypeus narrower at base; pronotum brown, roughly and transversely striate at posterior two-thirds, scutellum triangular, slightly wider than long, anterior portion brown, posterior angle ochraceous; tegmina semitransparent pale brown, long veins brown, crimson bands on commissural region, on claval-suture region, and on costal and first apical cells; pectoral and abdominal regions ochraceous with a light brown tinge, posterior legs spinulose and regularly marked with brown; last ventral segment longitudinally carinate, protruding slightly at center.

LUZON, Laguna Province, Los Baños (holotype, *S. Gonzales*; allotype, Baker collection, U. S. N. M.).

This species is named for Mr. Jose S. Camus, ex-director of the Bureau of Plant Industry and now undersecretary of the Department of Agriculture and Commerce, in recognition of his interest in promoting entomological work in this bureau.

ROXASELLA LOSBAÑOSA sp. nov.

Female, length, 8 millimeters; male, length, 7.

Light brown, with fuscous markings on vertex, pronotum, scutellum, commissural region of the clavus, and last third (apical region) of tegmina; venation golden yellow.

Vertex with ochraceous marginal stripe preceded by fuscous band, separated at the middle, anterior half of the vertex ochraceous; posterior two-thirds of pronotum finely, transversely striate and finely punctate; scutellum ochraceous with brown markings on central, lateral, and apical portions; face ochraceous with fuscous marks on basal margin of frons bordering apex of vertex; sternal region dark brown; venter ochraceous with brownish tinge; tegmina ochraceous with fuscous blotches on upper portion of two outer apical cells, and the tip of the wing cover.

LUZON, Laguna Province, Los Baños (type, Baker collection, U. S. N. M.); MINDANAO, Surigao, Lanao, Zamboanga (paratypes). The paratypes are slightly darker brownish.

Genus OMANELLA novum

Type, *O. barberi* sp. nov.

Vertex depressed, slightly produced in front, rounded, slightly, transversely sulcate and reflexed at apex, about one-third as long as distance around posterior margins of eyes; ocelli ochraceous, on the apex of vertex, distance from eye to ocellus one-fourth the distance between ocelli; general shape of frons somewhat triangular, broad at base and tapering towards clypeus. Clypeus elongate, broader at apex than at base. Shape and sculpture of pronotum and scutellum, the position and venation of tegmina similar to that of *Roxasella*, except that the first apical cell is smaller than the first anteapical, while that of *Roxasella* is equal in size to the first anteapical. The main difference from *Roxasella*, however, is in the size and shape of the vertex. The location of the ocelli is immediately above the eyes in *Roxasella*, and the antennal pit is shallower in this genus than in *Roxasella*. The pronotum is less sculptured in *Omanella*. The ovipositor and pygofer of this genus are long and slender; the ovipositor greatly exceeds the pygofer.

The genus is named in honor of Mr. Paul W. Oman, taxonomist in charge of auchenorhynchous Homoptera in the United States National Museum, whose valuable assistance and timely suggestions to the writer in the preparation of this paper are very much appreciated.

OMANELLA BARBERI sp. nov.

Female, length, including tegmina, 6 millimeters; male, length, including tegmina, 5.5.

Body ochraceous, vertex and pronotum slightly greenish ochraceous, each dorsal segment of abdomen with brown bands. Vertex greenish ochraceous with four black spots in a row near apex and two at posterior margin, distance between ocellus and eye almost one-third that of distance between ocelli themselves; pronotum greenish ochraceous, rounded anteriorly, slightly sinuate posteriorly, two-thirds posterior area finely punctate and striate, six dark spots at middle (three on each lateral side); scutellum ochraceous, with an oblique faint brown patch on each anterolateral angle, posterior angle differentiated by a transverse sulcus, finely striate, and with a brown dot on each lateral side; tegmina greenish amber, wing veins transparent amber, with a piceous marking on the ends of the outer and inner claval veins, and the claval suture at the point of union with the vein bound-

ing the commissural region, and brownish markings on veins practically in all angles of every cell; pectus, legs, and abdomen ochraceous, last ventral segment in male truncate, with two smoky semitransparent markings near middle; last ventral segment of female slightly notched at center, abdomen greatly tapering, ovipositor long, pointed, and distended far beyond pygofer, reaching almost to tips of tegmina.

The species is named for Mr. H. G. Barber, taxonomist in charge of the Hemiptera-Heteroptera in the United States National Museum.

MINDANAO, Zamboanga. BASILAN (type, Baker collection, United States National Museum).

OMANELLA PHILIPPINA sp. nov.

Female, length, 8 millimeters; male, length, 6.5.

Olive-green, face greenish ochraceous, pectoral and ventral regions greenish gray, prosternal region with black blotches. Vertex rounded, about one-fourth as long as distance between eyes, which are orange above and dark below, with two confluent orange spots occupying practically the whole frontal half of vertex, three distinct black dots on midsection; frons abruptly tapering towards the clypeal suture; clypeus narrowest at suture, abruptly enlarging towards apex; face greenish yellow; front tibiae orange; the two posterior with an orange blotch near femora; pronotum slightly wider than long, olive-green, with two small orange spots at middle of anterior margin, two large orange spots on midsection of pronotum, and one small orange spot on each lateral side; scutellum lighter green, with two orange blotches on each of the anterior angles; two on middle of lateral side, and one at apex of posterior angle; tegmina coriaceous smoky hyaline, wing veins testaceous, with orange stripes on commissural region, an orange spot on each humeral angle, and an orange stripe along costal vein.

This is one of Baker's manuscript species the type of which is labeled *Selanocephalus philippinensis* sp. nov. in the Baker collection. It differs from the type of *Selanocephalus* in the general shape of the face, the shape and sulca of the vertex, the shape of the pronotum, and the folding of the tegmina. The robust posterior tibia, which is slightly compressed and densely spinulose, one of the outstanding characteristics of *Selanocephalus*, is not present in this species.

MINDANAO, Zamboanga (type, Baker collection, U. S. N. M.).

OMANELLA JOHNSONI sp. nov.

Female, from middle of vertex to tip of ovipositor, 9.5 millimeters; male, from middle of vertex to tip of tegmina, 8.

Greenish ochraceous dorsad, and ochraceous ventrad, sides of body brown with a narrow pale ochraceous band on the posterior side of each abdominal segment; vertex with four black spots in a row, on depressed portion near apex, and two on posterior side, one-third of the distance from the eye to the distance between the spots; ocelli on the margin of vertex ochraceous. Pronotum, scutellum, and tegmina with the same color and markings as those of *O. barberi*, but the claval suture more golden in color. Very close to *O. barberi*, but larger. Last ventral segment of male a little rounded in front; ovipositor slenderer and relatively longer than that of *O. barberi*. The sheath projecting beyond the tips of tegmina.

I take pleasure in naming this beautiful species for Miss Dorothy Johnson, graduate assistant of the Ohio Biological Survey, whose assistance was gratefully received during the early part of this work.

MINDANAO, Zamboanga. BASILAN (type and paratypes, Baker collection, U. S. N. M.).

Genus PARABOLOCRATUS Uhler

Parabolocratus UHLER, Proc. U. S. Nat. Mus. 19 (1896) 291.

Parabolopona MATSUMURA, Coll. Agr. Hokoku Imp. Univ. Pub. 4 (1912).

Type, *P. guttatus* Uhler.

Probable distribution: Oriental.

This genus was erected by Uhler, but later Matsumura⁶⁸ gave it the name *Parabolopona*.

Elongate, slender; vertex almost as long as wide, triangularly rounded in front, a little expanded at the margin between the middle and the eyes, the margin a little upturned; eyes blunt, triangularly elongated; ocelli at apex of vertex immediately after the eyes and above the antennæ; pronotum transverse, anterior margin rounded, the lateral obliquely rounded, and the posterior gradually concave, almost as long as vertex which is longer than scutellum, surface finely wrinkled; scutellum with surface finely wrinkled, broader than long, the posterior angle separated by an arcuated suture; tegmina long, slender, and tapering, with four apical cells.

⁶⁸ Coll. Agr. Hokoku Imp. Univ. Pub. 4 (1912).

This genus is here reported from the Philippines for the first time.

PARABOLOCRATUS GUTTATUS Uhler.

Parabolocratus guttatus UHLER, Proc. U. S. Nat. Mus. 19 (1896) 291.

Parabolopona guttatus MATSUMURA, Coll. Agr. Hokoku Imp. Univ.

Pub. 4 (1912); 6,000 Illustrated Insects of Japan-Empire (1931).

Length to tip of wing covers, 6 to 7 millimeters; width of pronotum, 2.

Elongated, bright pea-green, polished. Head almost as long as wide; angularly rounded in front, the subacute apex a little upturned; eyes brown, long, bluntly angular on the inner side, the depressed middle crossed by two impressed lines, and a very slender impressed line on the middle; antennæ very long and slender, yellow from base to middle, brown from thence to tip. Pronotum short, sublunate, with the lateral ends diagonal and moderately rounded, the surface very finely wrinkled. Sternum and legs paler, the femora with some black specks, the tibiæ dotted with black and with black spines. Wing covers wedge-shaped when closed, a little tinged with yellow above the margin of the clavus marked with two black, small spots, one of which is on the apex, apical ends of membrane with two or three black traces, the surface highly polished.—UHLER, loc. cit.

LUZON, Mountain Province, Haight's Place (Osborn collection); Baguio (Baker collection, U. S. N. M.).

Genus KRISNA Kirkaldy

Siva SPINOLA, Mem. di Matem. e di Fis. Soc. Ital. Modena (1852)

167; STÅL, Hem. Afr. 4 (1866) 112; SIGNORET, Ann. Soc. Ent. Fr.

(1880) 197; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 107;

MELICHAR, Hom. Fauna Ceylon (1903) 167, nom. praeocc.

Krisna KIRKALDY, Entomologist 33 (1900) 243, nom. nov.; DISTANT,

Fauna Brit. Ind. Rhynch. 4 (1908) 297.

Eogypona KIRKALDY, Entomologist 34 (1901) 38.

Type, *K. strigicollis* (Spinola).

Distribution: Ethiopian and Oriental Regions.

Body oblong, somewhat depressed, above slightly convex; vertex narrower than the pronotum, short, rounded anteriorly or obtusely subangularly rounded, anterior margin somewhat acute but not foliaceous, vertex horizontal, flat, about twice as broad as the eyes; face dilated, frons and clypeus somewhat flat; frons longer than broad; clypeus spatuliform; genæ broad with the angle more or less angular and more or less emarginate; ocelli placed at the eyes on the anterior margin of the head; pronotum transverse, anteriorly narrowed, twice as broad as long slightly rounded at anterior margin, almost straight before the scutellum, lateral margins acute, scutellum triangular, a little broader than long; tegmina barely extending beyond the abdominal apex, apically narrow, irregularly veined; legs moderate, posterior femora compressed; posterior tibiæ very spinose.—ATKINSON, cited by DISTANT, loc. cit.

KRISNA STRIGICOLLIS Spinola.

Acocephalus stramineus WALKER, List Hom. 3 (1851) 847; SIGNORET, Ann. Soc. Ent. Fr. (1879) 88.

Krisna strigicollis SPINOLA (*Siva*), Mem. Mat. Fis. Soc. Modena (1852) 167; SIGNORET, Ann. Soc. Ent. Fr. (1880) 198, pl. 6, fig. 64; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 108; KIRKALDY (*Krisna*), Entomologist 33 (1900) 243; BIERMAN (*Siva*), Notes Leyd. Mus. 29 (1907) 166; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 297-298, fig. 189; MELICHAR, Notes Leyd. Mus. 36 (1913) 131, Java.

Bythoscopus testaceus WALKER, Journ. Linn. Soc. Zool. 1 (1857) 173.

Bythoscopus indicatus WALKER, List Hom. Suppl. (1858) 266.

Selenocephalus costalis STÅL, Freg. Eug. Resa Ins. (1859) 290; (*Siva*), Ann. Soc. Ent. Fr. (1864) 66; Öfv. Vet.-Akad. Förh. (1870) 736.

Length, including tegmina, 10.5 to 13 millimeters.

Greenish ochraceous to pale ochraceous; vertex short, about half as long as distance between eyes, narrower than pronotum, flat, slightly impressed, front margin reflexed, a discontinuous arcuate fuscous fascia bordering margin from eye to eye, crossing them with a longitudinal suture from center of posterior margin to apex of vertex, pronotum transverse, anteriorly rounded transversely and strongly striate; scutellum broad, about one and one-third as broad as long; tegmina with an oblique impression near each lateral angle, an arcuate impression near tegmina profusely punctated, with two small black markings at the apices of the clavus, anterior posterior margin from clavus down smoky white; posterior legs thickly decorated with stout spines.

Known host, *Acalypha* species.

Distant⁶⁹ reported the distribution as Bengal, Kangra Valley, Bombay, Nilgiri Hills, Burma, Tenasserim, Malay Peninsula, Cambodia, Java, Borneo, Celebes, North China, Philippines.

LUZON, Laguna Province, Los Baños, Mount Banahao: Rizal Province, Alabang (*Merino*): Tayabas Province, Panaon: Mountain Province, Trinidad (Osborn collection). NEGROS, Negros Occidental Province, La Carlota (*Merino*). BILIRAN (Osborn collection).

KRISNA STRIATA Kirby.

Krisna striata KIRBY (*Gypona*), Journ. Linn. Soc. Zool. 24 (1891) 171; MELICHAR (*Siva*), Hom. Fauna Ceylon (1903) 167; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 298-299, fig. 190.

Eogypona kirbyi KIRKALDY, Entomologist 34 (1901) 39.

Length, including tegmina, about 13 millimeters.

⁶⁹ Fauna Brit. Ind. Rhynch. 4 (1908) 298.

Yellowish green, the vertex slightly more angular and more pointed than in the preceding species; the venation is green while that of the closely related *strigicollis* is yellow. The tegmina are not as compact; they are more spread and rather pubescent, and not rugulose or punctate.

The distribution as reported by Distant,⁷⁰ is Ceylon, Kandy, Maskeliya, Pundaluoya, Peradeniya, Muruwale, Gumaduwa, Haputale, Keigalle.

LUZON, Nueva Vizcaya Province, Imugan (Osborn collection). Hitherto not recorded in the Philippines.

Division TARTESSUSARIA

To this division belong the species having the vertex about or more than three times broader between eyes than long, and with the ocelli near the anterior margin and nearer to the eyes than to each other. The two genera are separated by the following characteristics:

Vertex and pronotum both angularly produced in front of eyes.

Tartessus Stål.

Vertex alone angularly produced in front of eyes; pronotum twice, or slightly more than twice, as long as vertex..... *Drabrescus* Stål.

Genus TARTESSUS Stål

Tartessus STÅL, Öfv. Vet.-Akad. Förh. (1865) 156; SIGNORET, Ann. Soc. Ent. Fr. (1878) 347; SPANGBERG, Öfv. Vet.-Akad. Förh. No. 9 (1877) 3; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 302-303.

Type, *T. ferrugineus* Walker.

Distribution: Eastern British India, Malay Peninsula and Archipelago.

Body oblong; vertex broad, short, in front of eyes strongly angularly roundly produced, shorter or narrower at apex; head beneath strongly reclinated, face moderately flattened, a little narrowed posteriorly; eyes large, oblique; ocelli placed on margin of vertex near eyes; pronotum large, anteriorly very strongly, roundly, and subangularly produced; scutellum longer than broad, about as long as pronotum; tegmina oblong, apex somewhat valvate, apical cells five; posterior densely spinulose.—DISTANT, loc. cit.

TARTESSUS FERRUGINEUS Walker.

Tartessus ferrugineus WALKER (*Bythoscopus*), List Hom. 3 (1851) 865-866; STÅL (*Tartessus*), Öfv. Vet.-Akad. Förh. (1870) 738; SPANGBERG, Öfv. Vet.-Akad. Förh. No. 9 (1877) 7; SIGNORET, Ann. Soc. Ent. Fr. (1880) 356; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 303, fig. 193; BANKS, Philip. Journ. Sci. § D 4 (1909) 553; MELICHAR, Notes Leyd. Mus. 36 (1913) 131.

⁷⁰ Tom. cit. 299.

Bythoscopus malayus STÅL, Freg. Eug. Resa Ins. (1859) 290, *B. biarcuatus*, *unilineatus*, *unifascia* Walker MS.; STÅL (*Tartessus*), Öfv. Vet.-Akad. Förh. (1865) 156; SIGNORET, Ann. Soc. Ent. 1880) 157.

Female, length, including tegmina, 10 millimeters; male, 8.

Tawny, rather narrow, tapering from the head to the tip of the abdomen; head minutely punctured, very short, conical, a little broader than the chest, black along the fore border, extremely concave behind crown, extremely short in the middle where its length is not one-tenth of its breadth, rather broader on each side; under side transversely striated, across scutcheon minutely punctured, having on each side of the fore border a triangular compartment, which is partly smooth, partly slightly striated; breast partly black on each side; abdomen black; hind borders of the segment tawny; veins of the forewings few, black, excepting those along the hind border; hind wings gray.—WALKER, List Hom. 3 (1851) 865–866.

This species was originally described from Java, and its distribution is given by Distant⁷¹ as Tenasserim, Malay Peninsula; Perak, Malacca, Java, Mysol, and Japan. Banks⁷² made the first Philippine record. The available material indicates that the species is present all over the Philippines. Known host plant, mango.

TARTESSUS MALAYUS Stål.

Tartessus malayus STÅL, Freg. Eug. Resa Ins. 290; Öfv. Vet.-Akad. Förh. (1865) 156.

Tartessus ferrugineus STÅL, Öfv. Vet.-Akad. Förh. (1870) 738; SPANGBERG, Öfv. Vet.-Akad. Förh. No. 9 (1877) 7; SIGNORET, Essai sur les Jassides (1878) 357–358, pl. 9e, fig. 82.

Length, including tegmina, as in *ferrugineus*, 8 to 10 millimeters.

This species was described by Stål in 1859, who in 1870 considered it to be a synonym of *T. ferrugineus* Walker. However, Signoret⁷³ considered it a distinct species. It is very similar to *ferrugineus* in size and color, with certain slight differences of coloration of the tegmina and venation, features that, however, are not very constant. For example, the black band on the costal area is sometimes absent in *ferrugineus*. The venation in *malayus*, which is black or piceous, is also found on at least the lateral area of *ferrugineus*. The main difference is the presence of the double arcuate marginal black bands on the upper region of the frons in this species, instead of the single arcuate

⁷¹ Fauna Brit. Ind. Rhynch. 4 (1908) 303.

⁷² Philip. Journ. Sci. § D 4 (1909) 553.

⁷³ Essai sur les Jassides (1878) 357–358.

marginal black band between the eyes, which sometimes is even absent.

Vertex and pronotum yellowish brown, vertex finely punctate, pronotum transversely striate; scutellum amber brown, quite long, about one and one-half times as long as wide; tegmina bronzy brown, veins black or fuscous, costal area black; face with double marginal black bands on the upper region of face. In some males these markings are even more accentuated by a longitudinal median band which is continuous to the clypeus. In others only certain black markings on the clypeus and lora are present; lateral margins of sternum with a black area.

Distribution: Malacca, Philippines, and Formosa.

LUZON. MINDORO. BASILAN. (Osborn collection). One specimen has been taken in Formosa. I believe that this species is as widely distributed as *T. ferrugineus*.

TARTESSUS FIEBERI Stål.

Tartessus fieberi STÅL, Öfv. Vet.-Akad. Förh. (1865) 158; (1870) 738; SPANGBERG, Öfv. Vet.-Akad. Förh. No. 9 (1877) 9; SIGNORET, Essai sur les Jassides (1878) 359-360; BANKS, Philip. Journ. Sci. § D 5 (1910) 51.

Female, length, including tegmina, 12 millimeters; male, 10.

Vertex chestnut-brown, pronotum black, with a short brown stripe below the eyes, and faint, narrow, brown lateral and posterior marginal stripe, transversely striated; scutellum black, minutely shagreened, except a small lateral triangle which is smooth, about one and one-half times as long as broad, marginal angle pointed, with brown margin, an inverted median anchor-shaped impression on the scutellum; tegmina chestnut-brown with piceous or fuscous venation; black band within the costal area as in the two preceding species; eyes and ocelli brown; black arcuated line below apex of vertex, frons, lora, clypeus, and anterior half of cheek black; the rest of the face golden brown; legs brown, except posterior femora which are black; hind tibia spinulose.

Distribution, according to Signoret,⁷⁴ Mysol and Philippines.

LUZON, Bataan Province, Limay (Osborn collection); Laguna Province, Mount Banahao (*Merino*). MINDANAO, Lanao Province, Mumungan: Surigao Province, Surigao. SAMAR, Catbalogan. BILIRAN. BASILAN. These records indicate that this species is as widely distributed in the Philippines as either of the two preceding species.

⁷⁴ Op. cit. 359-360.

Genus DRABESCUS Stål

Drabescus STÅL, Öfv. Vet.-Akad. Förh. (1870) 738; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 304.

Type, *D. remotus* Walker, from the Philippines.

Distribution: India, Malaya.

Ocelli remote from the eyes, almost more so than the antennæ; anterior tibiæ above broadly subsulcate; superior margin of the anterior tibiæ distinctly dilated (Stål). Vertex broadly transverse, short, moderately concave, the anterior margin ridged; head beneath much broader than long, the face a little longer than broad, somewhat flat; pronotum transverse, much broader than long, anterior margin convex; scutellum large, broad, subtriangular; tegmina with four large distinct apical cells divided by smooth veins, the remaining venation punctate.—DISTANT, loc. cit.

DRABESCUS REMOTUS (Walker).

Drabescus remotus WALKER (*Bythoscopus*), Cat. Hom. Ins. Suppl. 32 (1851) 866; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 304.

Bythoscopus ater WALKER, Cat. Hom. Ins. Suppl. 43 (1851) 871; STÅL (*Selenocephalus*, subgenus *Drabescus*), Öfv. Vet.-Akad. Förh. (1870) 738; SIGNORET, Essai sur les Jassides (1870) 208.

Female, length, including tegmina, 10 millimeters; male, 8.

Pale ferrugineous, mottled with fuscous. Vertex broadly transverse, very short, about one-fifth as long as wide, slightly concave in front; pronotum transversely rounded anteriorly and broadly concave posteriorly, deeply, transversely striated; scutellum large, as long as wide; tegmina leathery, hyaline, posterior portion folded in almost perpendicularly, venation punctate, posterior fourth smooth-veined, distinctly four apical cells.

Distribution: Philippines.

LUZON, Laguna Province, Mount Banahao (*Merino*): Nueva Viscaya Province, Imugan: Mountain Province, Haight's Place. MINDANAO, Surigao. BILIRAN (Osborn collection). This species is widely distributed in the Islands.

Division JASSUSARIA

The insects of this division are easily recognized by the non-laterally ridged and nondiscally foveate or excavate vertex, the lateral margins more or less obliquely, basally narrowed at inner margins of the eyes. *Jassus* is the only genus determined.

Genus JASSUS Fabricius

Jassus FABRICIUS, Sust. Rhyng. (1803) 85.

Coelidia GERMAR, Mag. d. Ent. 4 (1821) 38 and 75.

Deridna WALKER, List. Hom. Suppl. (1858) 319.

Type, *J. nervosus* Fabricius.

Distribution: Cosmopolitan.

Body oblong, vertex obtuse, longer than width between the eyes, narrower than pronotum, narrow at margin between eyes, then gradually broadened above; pronotum short, greatly transversed, shorter than the scutellum; scutellum large, narrower than long; tegmina apically margined with five apical cells, but no anteapical; vertex with eyes narrower than pronotum, face widened downward; clypeus greatly broadened at base.

JASSUS CONSPERSUS Stål.

Coelidia sparsa STÅL, Öfv. Vet.-Akad. Förh. (1854) 254; Freg. Eug. Resa Ins. (1859) 290-316.

Jassus conspersus STÅL, Hem. Ins. Philip. (1870) 735; SPANGBERG, Öfv. Vet.-Akad. Förh. No. 8 (1878) 25; MELICHAR, Notes Leyd. Mus. 36 (1913) 133; BAKER, Philip. Journ. Sci. § D 10 (1915) 55-56.

Female, length, including tegmina, 9.25 millimeters; male, 8.

This species is brown to fuscous and well marked by yellow spots; vertex slightly longer than width between eyes, with two light brown carinate plates running longitudinally, separated by median groove, narrower at the posterior margin; frons yellowish with reddish lateral stripes at the clypeus strongly broadened apically; upper tip of lora acute; hind margin of last ventral segment of female subtruncate at center and somewhat sinuate at sides.

Habitat: Luzon, Philippine Islands.

LUZON, Laguna Province, Los Baños: Rizal Province, Alabang (1 female and 3 males).

JASSUS MINDANAOENSIS sp. nov.

Female, length, including tegmina, about 10 millimeters.

Greenish ochraceous, quite close to *J. conspersus*. Vertex greenish brown, longer than distance between eyes; ocelli brown; eyes fuscous; pronotum fuscous, thickly covered with greenish ochraceous granules. Scutellum subequilateral, light amber brown, with two broad fuscous areas on center of scutellum equidistant from lateral and basal margins, and thickly covered with greenish ochraceous granules; face greenish ochraceous; frons about twice as long as broad between the eyes, dimly, laterally striate with short, greenish, perpendicular lines; margined above with narrow, longitudinal, greenish fascia between eyes and frons; cheeks and clypeus greenish ocher; body beneath abdomen fuscous; venter ochraceous, except the center of last segment and ovipositor, which are fuscous; thorax stramineous, two anterior legs ochraceous brown; anterior claws brown and the two last pairs fuscous; the posterior legs stramineous, armed with large fuscous spurs.

This species is quite similar in the contours of the parts of the body to *J. conspersus*. The greatest difference is in the last ventral segment of the female genitalia, that of *conspersus* being sinuate at the side and truncate at the center, while that of *Jasus mindanaoensis* is slightly bisinuate. This species is slightly larger than *J. conspersus*.

MINDANAO, Butuan (*Pablo S. Soriano*; type in my collection).

Division ATHYSANUSARIA

This division of cicadellids is distinguished by the three ante-apical areoles, the outer branch of the first sector of the elytra with two forks; the vertex only half as long as, or less than, the width between the eyes; face not longer than the breadth between the bases of antennæ.

The only forms described are species of *Athysanus*, and its subgenus *Stirellus*, erected by Osborn and Ball ⁷⁵ and later raised to the category of a genus.

Genus ATHYSANUS Burmeister

Athysanus BURMEISTER, Gen. Ins. 1-14 Subg. 2 (1840); EDWARDS, Trans. Ent. Soc. Lond. (1888) 35; VAN DUZEE, Trans. Am. Ent. Soc. 19 (1892) 299; MELICHAR, Hom. Fauna Ceylon (1903) 182; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 343.

Type, *A. argentatus* Fabricius, a Palæarctic species.

Distribution: General.

Robust; vertex with the eyes wider than the pronotum, obtusely produced, convex above, ocelli at apex of vertex, near eyes; frons, clypeus, and cheek wider at their bases; cheek reaches clypeus at end; pronotum transverse; tegmina overlap at apex, appendix well developed.

ATHYSANUS ATKINSONI Distant.

Athysanus atkinsoni DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 345.

Length, including tegmina, 4.5 millimeters.

Smoky ochraceous, vertex triangularly produced, two fuscous markings below ocelli; a black fascia on vertex between eyes; a fine furrow or median sulcus from fascia to posterior margin of vertex. Frons tumid, almost as broad as long, with transverse brown striæ; cheeks abruptly impressed between eyes; pronotum dark grayish with anterior lateral margin ochraceous; posterior lateral margin with a narrow ochraceous line; scutellum ochraceous, with three discernible rectangular brown mark-

⁷⁵ Ohio Naturalist 2 (1902) 25, 250.

ings on anterior margin, and one on apical angle; two dark spots below apex of vertex; face with short transverse striæ; body beneath ochraceous, anterior half of each abdominal segment dark brown; tegmina grayish subhyaline; veins pale brownish; hind femora with oblique whitish striæ.

LUZON, Rizal Province, Alabang.

Genus STIRELLUS Osborn and Ball

Stirellus OSBORN and BALL, Ohio Naturalist 2 (1902) 250 (subgenus).

Type, *Athysanus* (*Stirellus*) *bicolor* Van Duzee.

Head about as wide as pronotum, vertex narrow, rarely as wide as the long diameter of an eye, usually longer than its basal width. Front inflated, almost touching eyes above; vertex and front produced into a long, conical point, their margins indistinct. Elytra narrow, about as long as the abdomen; venation as in *Athysanus*, regular.—OSBORN and BALL, loc. cit.

STIRELLUS NIGRIPECTUS sp. nov.

Male, length, including tegmina, 2.5 millimeters; female, 3.

Vertex, pronotum, scutellum, and frons greenish yellow; tegmina smoky gray, legs ochraceous; pectus and venter black, except last ventral segment and anal plates pale ochraceous. Vertex angularly produced, pointed, almost as wide as long; ocelli at the apex of vertex, just above eyes, piceous; eyes black; frons light brown with ochraceous transverse striæ; clypeus small; almost perpendicular; pronotum transverse, shorter than length of vertex, rounded anteriorly with two faint, parallel, transverse, dark grayish lines; scutellum small, broader than long, with one green spot on each basal angle; a transverse suture on middle; venation milky white; last ventral segment almost truncate, pale ochraceous; pygofer profusely bristled.

LUZON, Rizal Province, Alabang (types and paratypes in my collection): Manila (paratypes, Osborn collection).

The species described herewith was collected from Alabang, Luzon. Professor Osborn's specimens, which were determined later, are from Manila.

Division THAMNOTETTIXARIA

This division of cicadellids differs from *Athysanusaria* in the proportion of the face, which is longer than broad, while that of *Athysanusaria* is not longer than broad.

In this group, *Nephotettix* Matsumura and *Eutettix* Van Duzee are the representatives studied. The genus *Nephotettix* is separated from other genera of this division by the following

synoptic characters: Breadth of vertex between eyes considerably shorter than length of pronotum and scutellum together. Clypeus broadest at base.

Distant's ⁷⁶ description of *N. bipunctatus* tallies with the above description.

Genus NEPHOTETTIX Matsumura

Nephotettix MATSUMURA, Termész. Füzetek 25 (1902) 378; MELICHAR, Hom. Fauna Ceylon (1903) 192; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 359.

Type, *N. cincticeps* Matsumura, from Japan.

Distribution: Eastern Palæarctic, Ethiopian, Oriental, Malayan, and Australian Regions.

Body narrow, compressed, vertex short, in front broadly rounded, union of vertex to front rounded, a transverse furrow rather near front margin running from one eye to the other, frontal margin rather upcurved, the disk of vertex arched; ocelli at union of vertex to front, not close to eyes and on the inside of the suture of the face and cheeks; face broad as long or shorter than the width of the cheek-angles, flat, at the ocelli twice as broad as the clypeus, margins of the clypeus flatly curved; clypeus extending beyond the margins of the cheeks, somewhat quadrangular, broadest at base; pronotum longer than the medial length of vertex, on posterior margin very flatly curved, at the sides strongly rounded; tegmina at apices broadly rounded off, with only one discal cell; three middle cells, the first of which is small, and four terminal cells, no transverse vein on clavus, membranal appendix rather broad; wings at apices narrowly rounded; venation as in *Thamnotettix*.—MATSUMURA, cited by DISTANT, loc. cit.

NEPHOTETTIX APICALIS Motschulsky.

Nephotettix apicalis MOTSCHULSKY (*Pediopsis*), Etud. Ent. (1859) 110; MELICHAR, Hom. Fauna Ceylon (1903) 193; Wiener Ent. Zeit. 24 (1905) 303; MATSUMURA, Trans. Sapporo Nat. Hist. Soc. 1 (1905) 20; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 360-362, fig. 229; MATSUMURA, Insek. Zuckerrohr Formosa 2 (1910) 1; MELICHAR, Notes Leyd. Mus. 36 (1914) 133; FLETCHER, Proc. Soc. Ent. Mut. Pusa (1918) 177; DAMMERMAN, Landbouwdierk Oöst Ind. (1919) 170; FLETCHER, Proc. Third Ent. Meet. Pusa 1 (1920) 275. *Pediopsis nigromaculata* MOTSCHULSKY, Etud. Ent. (1859) 111; MATSUMURA, Termész. Füzetek 25 (1902) 379.

Thamnotettix nigropicta STÅL, Öfv. Vet.-Akad. Förh. (1870) 740; ATKINSON, Journ. As. Soc. Bengal 57 (1889) 338; KIRBY, Journ. Linn. Soc. Zool. 25 (1891) 137.

Selenocephalus cincticeps UHLER, Proc. U. S. Nat. Mus. 19 (1896) 292.

Nephotettix nigropicta KIRKALDY, Rep. Exp. Sta. Haw. Sugar Planters' Assoc. pt. 9 (1906) 333; Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 3 (1907) 54.

⁷⁶ Fauna Brit. Ind. Rhynch. 4 (1908) 359-360, fig. 228.

Length, including tegmina, about 4 millimeters.

Vertex greenish virescent with black upper margin, upper half of frons, lora, and middle of gena black; upper and middle part of clypeus with a black stripe, in some the entire face black; a black, somewhat elongated, spot on the middle before claval suture and lower third of tegmina; sternum and abdomen including pygofer more or less black, in some only black middle markings on each segment. In some almost wholly black, posterior oral tarsi with black markings. Head as broad as pronotum, vertex slightly broader than distance from middle to eyes. Last ventral segment somewhat rounded.

Nephotettix apicalis has no definite zoöcentric region. It is found in India, Ceylon, and all of the East Indies as far as the Philippines and Formosa. It is recorded in South and East Africa. In the Philippines this insect is one of the worst pests of rice. Occasionally it appears in great numbers during the later part of the rainy season and attacks young rice until the plants in several hundreds of hectares of paddies are completely destroyed. It is controlled effectively by the use of light traps.

NEPHOTETTIX BIPUNCTATUS Fabricius.

Nephotettix bipunctatus FABRICIUS (*Cicada*), Syst. Rhyng. (1803) 78; STÅL (*Thamnotettix*), Hem. Fabr. 2 (1869) 82; ATKINSON, Journ. As. Soc. Bengal 54 (1885) 111; MATSUMURA (*Nephotettix*), Termész. Füzetek 25 (1902) 379; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 359-360, fig. 228; FLETCHER, Proc. Second Ent. Meet. Pusa (1918) 176; Proc. Third Ent. Meet. Pusa 1 (1920) 275.

Length, including tegmina, about 4 to 4.5 millimeters.

Vertex slightly broader than distance from middle to eye. Margin of vertex slightly convex anteriorly and depressed; entire dorsal side of body yellowish green, except the triangular patch starting from extreme edge of clavus on commissural line to both sides of tegmina, which is pale brown; from head to tip of ovipositor pale yellow and spotless, except prosternum which has a black marking on each side under each femur, and middle lower extremity of last abdominal segment.

The coloration of the males of *Nephotettix apicalis* and *N. bipunctatus* figured by Distant⁷⁷ are the complete black face of *apicalis*, whereas that of *bipunctatus* is black only on the basal parts of the frons and the lora; the absence of the arcuated marginal fascia on the vertex which is found in *apicalis*; the black on the pectus and venter are more intensified in *bipunc-*

⁷⁷ Tom. cit. 359-361, figs. 228, 229.

tatus, the face completely black in the latter species. The middle tegminal marking is only partially black, semilunar in *bipunctatus*, and not in the form of oblique long lines as in *apicalis*. The black apical markings of *bipunctatus* are not as intense as those of *apicalis*.

Nephotettix bipunctatus is here reported for the first time from the Philippines; previously known from Calcutta.

As to this leafhopper being an important potential pest, I shall quote Annandale's information to Distant:⁷⁸

... in Calcutta this species appears in enormous swarms in the air at night about the end of the rains (generally in October). Gas-lamps in the street have to be protected against the green fly, as it is called, to prevent the light being put out by the numbers the dash into it. I have known over three pounds weight of dead "green flies" and other insects to be swept up under a couple of electric lamps in one morning.

In the Philippines this species is a more persistent pest of rice than *N. apicalis*.

Genus EUTETTIX Van Duzee

Eutettix VAN DUZEE, Psyche 6 (1892) 307; MATSUMURA, Termész. Füzetek 25 (1902) 380; KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 (1906) 331; Bull. 3 (1907) 53; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 362; DELONG, Tenn. St. Bd. Ent. Bull. 17 (1916) 65.

Type, *E. lurida* Van Duzee.

Distribution: World-wide.

Intermediate in its characters between *Thamnotettix* and *Athysanus*. In form the species resembles *Phlepsius*, being broader and stouter than in *Thamnotettix*. The vertex is rounded anteriorly and more or less transversely impressed behind the apex; the front is nearly as wide as in *Athysanus*; the elytra are proportionately shorter than in *Thamnotettix*, and moderately valvate at the apex, with one transverse nervure between the first and second sectors. The sides of the pronotum are shorter than in *Thamnotettix* and ecarinate.—VAN DUZEE, cited by DISTANT, loc. cit.

EUTETTIX DISCIGUTTUS (Walker).

Eutettix disciguttus WALKER (*Acocephala*), Journ. Linn. Soc. Zool. 1 (1857) 172; SIGNORET (*Bythoscopus*), Ann. Soc. Ent. Fr. (1879) 88; MATSUMURA, Trans. Sapporo Nat. Hist. Soc. 1 (1905) 20; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 362-363, fig. 320; MELICHAR, Notes Leyd. Mus. 36 (1913) 133, Java.

Thamnotettix sellata UHLER, Proc. U. S. Nat. Mus. 19 (1896) 294; MATSUMURA (*Eutettix*), Termész. Füzetek 25 (1902) 381; MELICHAR, Hom. Faun. Ceylon (1903) 189; Wiener Ent. Zeit. 24 (1905)

⁷⁸ Tom. cit. 359-360.

302; KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 331.

Eutettix sellatus OSHANIN, Ann. Mus. Zool. St. Peters. 11 (1906) 140; MATSUMURA, Journ. Coll. Agr. Sapporo 5 (1914) 190.

Female, length, including tegmina, 4 millimeters.

Vertex greenish yellow, somewhat angularly produced, one-third anterior surface reflexed, tinged grayish with two close light brown spots, below them on the vertex two almost indistinguishable yellowish green markings; last half of vertex medially, longitudinally divided by a groove; two fuscous spots, one each between the eyes and median suture; eyes fuscous; face pale white; pronotum transverse, one and one-half times as long as vertex, sordid green to dark gray, marked with irregular fuscous spots; scutellum yellowish green, small, about one and one-half times as broad as long, the third upper lateral side with a fuscous spot, and a dark brown line between transverse sulca and marginal angle of apex; tegmina milky white, with greenish and fuscous spots all over, concentrating at tips; venation light brown; venter and legs pale, last ventral segment centrally sinuated.

Distribution: Throughout the Malayan Archipelago, Queensland, Japan, East Africa. Hitherto not recorded from the Philippines.

LUZON, Rizal Province, Alabang.

EUTETTIX MARQUEZI sp. nov.

Female, length, about 3.75 millimeters.

Vertex depressed, slightly longer than half the distance between eyes, median longitudinal suture not complete, light brown specks between this suture and eyes, two black spots on anterior border, frons ochraceous with darkened area on each side; clypeus wider at apex than at base; pronotum transverse, somewhat stramineous, smooth with irregular dark brown markings; twice as long as vertex; scutellum subtriangular, wider than long, anterior half almost completely brown, posterior angle ochraceous with brown markings at center; tegmina light brown, with light areas on middle and posterior parts, profusely and irregularly marked with fuscous, two longitudinal dark blotches on middle of claval area, and two on middle of corium, two distinct black spots on center of preinterior apical cells and two fuscous markings on innermost apical cells; venter dirty ochraceous, wing veins fuscous.

LUZON, Laguna Province, Mount Banahao (*J. Valdez*; type in my collection).

This species is named for Mr. Severo Marquez, my assistant in plant-pest control work in the Bureau of Plant Industry, Manila.

EUTETTIX BASILANUS sp. nov.

Male, length, including tegmina, 4.5 millimeters; female, 5.

Vertex greenish ochraceous with one fuscous arcuated band on margin of vertex, and one fuscous transverse band connecting eyes, one spot at inner side of eye just above anterior margin of vertex; face, frons, and antennæ ochraceous, the rest of face fuscous; pronotum finely striated and punctured, greenish ochraceous with dirty brownish patch on each of lateral sides; scutellum greenish ochraceous, with an olive-brown patch on each side of upper lateral angles; tegmina olive-brown, wide veins brown with dark spots on inner and outer claval veins, on vein of commissural suture, on claval suture, at tip of tegmina, veins between first and second apical cells, and on costal and discal areas, sometimes these blotches of the costal and discal are absent; body beneath wings and pectoral region fuscous; venter yellowish ochraceous with longitudinal median fuscous line.

MINDANAO, Zamboanga. BASILAN (type and paratypes, Baker collection, U. S. N. M.).

EUTETTIX MORISMUS sp. nov.

Female, length, including tegmina, 5.5 millimeters; male, 5.

Almost as small as *E. basilanus* but more slender and tapering, vertex dark ochraceous with chocolate-brown markings; pronotum dark greenish ochraceous, greatly and roughly striated; profusely marked with fuscous markings, twice as long as vertex and one and one-third as long as scutellum; scutellum yellowish ochraceous; claval region and middle portion clear to tip brown, with fuscous markings, at tip of tegmina three equidistant spots on commissural region, and some of veins, principally on the half posterior part; body beneath, face, pectus, abdomen, and legs greenish ochraceous.

MINDANAO, Zamboanga. BASILAN (types and paratypes, Baker collection, U. S. N. M.).

Division CICADULARIA

This division of the Cicadellidæ is characterized (according to Van Duzee as cited by Distant⁷⁹) by the obsolete or nearly obsolete outer fork, the outer branch of the first sector of the

⁷⁹ Tom. cit. 366.

elytra, and the well-rounded vertex, the middle of which is a little longer than the width between the eyes.

There are five species described in this paper belonging to this division; one in the genus *Balclutha* Kirkaldy, one in *Cicadula* Zetterstedt, and five in *Agellus* De Long and Davidson.

The following key, partly adopted from Distant,⁸⁰ is formulated for the separation of these three genera:

Key to the Philippine genera of the division Cicadularia.

- a*¹. First two sectors of the wings coalescing before the apex, the resulting nervure uniting with the costa some distance before the tip of the wing, thus forming but two apical areoles..... *Balclutha* Kirkaldy.
- a*². First two sectors of the wings united for a greater or less distance but soon again separating and attaining the apex of the wing, thus forming three apical areoles..... *Cicadula* Zett.
- a*³. The upper and lower cubital branches uniting on the middle of the tegmina, then separating and reuniting before the apical area, thus forming four apical areoles..... *Agellus* DeLong and Davidson.

Genus *BALCLUTHA* Kirkaldy

Gnathodus FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 504.

Balclutha KIRKALDY, Entomologist 33 (1900) 243, nom. nov.; DISTANT,

Fauna Brit. Ind. Rhynch. 4 (1908) 368.

Type, *B. punctata* Thunberg, universally distributed.

Body oblong, obtuse in front, much narrowed behind. Crown very short, about one-fourth as long as pronotum, scarcely longer in the middle than at the sides. Elytra much longer than the abdomen, overlapping at the apex; outer branch of the cubital nerve obsolete; membrane very large, as long as inner margin of clavus; appendix large. Submarginal wing-nerve complete; upper branch of the second wing-nerve confluent with the first, and running into the submarginal nerve as one nerve; third wing nerve joined to the lower branch of the second by a transverse nerve.

—EDWARDS, cited by DISTANT, loc. cit.

BALCLUTHA GRAMINEA sp. nov.

Female, length, including tegmina, about 3.25 millimeters.

Whole body green, with some yellowish green tinge. Vertex slightly angulate, about one-half as long as breadth between eyes; ocelli profusely green; eyes partly piceous, the rest fuscous; face almost as broad as long, unmarked; pronotum transverse, almost two and one-half times as long as vertex, slightly arcuate in front and laterally somewhat rounded, almost truncate; behind almost truncate; scutellum fairly large, triangular, almost as long as pronotum, smooth, with triangular semihyaline markings

⁸⁰ Loc. cit.

on each of the basal angles, with an impressed transverse line one-third the distance from apical angle; tegmina somewhat broad on middle, narrowed behind, hyaline towards apex; venation dark green, except that of the apex which is semitransparent white; pectus above and beneath green; abdomen above and beneath yellowish green. Near *B. viridis* Matsumura.

LUZON, Manila (*F. Q. Otanes*, holotype in my collection).

Genus *CICADULA* Zetterstedt

Cicadula ZETTERSTEDT, Ins. Lapp. (1838) 296.

Macrosteles FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 504.

Thamnus FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 505.

Limnotettix SAHLBERG, Cicad. (1871) 224.

Type, *C. variata* Fall, a Palæarctic species, world-wide in distribution.

Cicadula is differentiated from *Balclutha* by having the first two sectors of the wings united for a greater or less distance but soon again separating, thus forming three apical cells, instead of coalescing before the apex, with the resulting union of the nervure with the costa, forming only two apical cells as in *Balclutha*.

CICADULA AREVALOI sp. nov.

Female, length, including tegmina, 3.25 millimeters.

Light greenish yellow, vertex distinctly marked with two black dots near posterior margin slightly nearer to eyes than to each other, two triangular fuscous marks on apex of vertex near eyes, connecting with faint marginal line; inner third of eyes piceous, the rest fuscous; frons striated with fuscous transverse striæ; pronotum with anterior third greenish yellow, the rest dark gray, slightly transverse, anterior and lateral sides rounded, posterior margin almost truncate; scutellum yellowish with two large acute triangular black markings on each lateral angle with distinct incomplete transverse groove equilateral; tegmina smoky hyaline, venation milky white, the outer posterior veins tinged with brownish; body black; ventral segments and pygofer pale yellow; ovipositor black; legs, especially the last tibia, thickly spinuled.

MINDANAO, Occidental Misamis Province, Oroquieta (*P. S. Soriano*, type in my collection).

This species is named in honor of Isaias Arevalo, of the Bureau of Plant Industry, in recognition of his long and efficient service in the plant-pest and disease-control division.

Genus AGELLUS DeLong and Davidson

Agellus DeLong and Davidson, BAKER, Invertebrata Pacifica 1 (1903) 1 (*Eugnathodus*) wrong det.; DELONG and DAVIDSON, Ohio Journ. Sci. 33 (1933).

Type, *A. neglecta* DeLong and Davidson.

Distribution: Idaho, Arizona, Texas, Nebraska, Georgia, Florida, and Colorado, in the United States; Luzon, Negros, Mindanao, and Cebu, in the Philippines. Probably of wider distribution.

Agellus was proposed by DeLong and Davidson for *Eugnathodus* which Baker erected in 1903, citing a wrong species as type. Although the description was correctly based upon the species that Baker apparently had in mind when he described the genus *Eugnathodus*, the type specimens proved to belong to a species of *Balclutha*. Therefore, *Eugnathodus* Baker required a new name, according to opinions 14 and 16 of the International Code of Zoölogical Nomenclature. *Agellus* is closely allied to *Balclutha* and *Cicadula*, but differs in the following characteristics:

Vertex broadly rounded, slightly broader than pronotum, anterior and posterior margins almost parallel, lateral posterior angle not wider than vertex. In *Balclutha*, inner sector of tegmina not forked, two anteapical cells produced. In *Cicadula*, these first two sectors of wings united, but separated at a certain distance and reaching apex of wing, thus forming three apical areoles. In *Agellus* the upper and lower cubital branches unite, separate, re-unite, and separate again, forming four apical cells.

This genus is placed in the division Cicadularia, tribe Macrochelini, the species of which have a shorter vertex, usually rounded. The ædeagus, according to DeLong and Davidson,⁸¹ bears dorsal and basal protruding processes, while in *Balclutha* the basal portion is enlarged and may extend dorsally but without finger-like processes.

A few specimens from the Philippines have been examined and compared with some of the type specimens of DeLong and Davidson at the Ohio State University. The generic characteristics of *Agellus* were those of these specimens, more so because the genitalia of one of them proved to be identical with the genitalia of *Agellus neglecta*, the type species of this genus. A few new species of *Agellus* are here described.

⁸¹ Ohio Journ. Sci. 33 (1933).

In 1906 Kirkaldy⁸² described specimens of leafhoppers collected by Koebele and Perkins from the Viti Isles of the Fiji group, for which he erected the genus *Nesosteles*, the type species being *N. hebe*. In his description Kirkaldy did not give enough detail to make his genus easily recognizable. He merely stated, "allied to *Macroteles* but radial is not obsolescent and the wing venation is different." Then he continued to describe his species by merely giving the coloration and size of the insect. The description, however, is accompanied by a sketch of wing venation through which his genus may be placed.

I have examined the type specimen of this genus (*Nesosteles*), in the United States National Museum, and it seems that *Agellus* and *Nesosteles* are the same thing. However, because of lack of specimens for the study of the genitalia and the wing venation I do not venture to unite them.

AGELLUS NEGLECTA DeLong and Davidson.

Eugnathodus abdominalis BAKER, Invertebrata Pacifica 1 (1903) 1.

Agellus neglecta DELONG and DAVIDSON (*Eugnathodus*), Ohio Journ. Sci. 33 (1933) 55-56.

Male, length, about 3 millimeters.

Vertex rounded, one-fourth as long as distance between eyes, median longitudinal groove grayish brown, two dark spots below ocelli; ocelli ochraceous at apex; frons rectangular, margined by green stripes and transversely striated by brown striæ; clypeus narrow, rectangular; cheek and lora pale ochraceous; eyes blood red; pronotum transverse, twice as long as vertex, rounded anteriorly, truncate at posterior end, grayish with four longitudinal brownish bands and one darker, grayish, longitudinal, median band; scutellum small, dark gray, with a longitudinal median band of darker gray and two brownish spots on lateral angles; tegmina smoky hyaline with milky-white venation; pectus and dorsum, as well as dorsal part of abdomen, dark; venter greenish, with dark markings; legs pale green, except forelegs, which are brownish.

LUZON, Manila.

Distribution: Widely distributed in the United States. It is here reported from the Philippines for the first time.

AGELLUS RUFOFASCIATUS sp. nov.

Female, length, including tegmina, 4 millimeters.

Vertex pale yellow, about one-fourth as long as broad, rounded in front, with a median, longitudinal suture; ocelli red, on apex

⁸² Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906).

of vertex near eyes; eyes rufous; frons broad, slightly broader than long, triangular, tapering towards clypeus and confluent with vertex; clypeus narrow, rectangular; cheek greatly impressed under antennæ between eyes and carinate edge of frons; pronotum slightly broader than long, about four times as long as vertex and about twice length of scutellum, rounded at base and truncate at posterior margin, pale ochraceous; scutellum orange-yellow with pale yellow tinge in apical angle; visible bristles at base of second segment of antennæ. Tegmina milky white, with hyaline veins and rufous to crimson-red, longitudinal, parallel fascia within cells and tegminal areas; body beneath with fuscous markings; pygofer milky white, thickly bristled, ovipositor pink; last ventral segment medially notched.

LUZON, Rizal Province, Alabang (*J. Valdez*, holotype in my collection; paratypes, Baker collection, U. S. N. M.).

AGELLUS PHILIPPINENSIS sp. nov.

Male, length, including tegmina, 4 millimeters.

Vertex pale ochraceous, two amber-colored spots at base near eyes, short median carina dividing vertex, which is three times as broad between eyes as long; ocelli hyaline, in margin of vertex near eyes; eyes blood red; frons oval, almost twice as long as wide; lower half of clypeus sordid, rectangular, loræ small, distinctly tumid, cheeks shiny yellow, impressed, fuscous; pronotum pale ochraceous, slightly transverse, about three times as long as vertex, rounded in front and on sides, hind margin almost truncate, three parallel, longitudinal, orange lines on center and six orange spots between these lines and sides near anterior margin; scutellum pale ochraceous, with yellow markings on each of three angles; tegmina long, with all cells or areas tinged with orange-fuscous, except appendix and two inner apical cells which are milky white; body beneath, pectus, and legs ochraceous; venter pale ochraceous, except last ventral segment and genital sclerites, which are ochraceous; pygofer profusely bristled.

This species is similar to *A. rufofasciatus*, but the external genitalia are clearly different. The last ventral segment of the female in this species is broadly notched at the center, while that of *rufofasciatus* is slightly notched. The coloration also is different. *Agellus rufofasciatus* has alternating white cells; tegmina pinkish red and wing veins hyaline, while in *philippinensis* the cells are light orange and the veins distinctly milky white.

NEGROS, Occidental Negros Province, La Carlota (*C. T. Buligan*, type and paratypes in my collection).

AGELLUS BIFASCIATUS sp. nov.

Female, length, including tegmina, about 2.3 millimeters.

Very small species, yellowish green, vertex rounded, slightly obtuse on middle, about as long as width between eyes, apex green; face without any marking, almost as long as width between eyes; eyes fuscous; pronotum about twice as long as vertex, anteriorly and laterally rounded, posteriorly truncate, a greenish brown tinge on margin of each basal angle; scutellum triangular, as long as broad, upper half dark gray, apical half yellow; tegmina with reddish brown fascia on each side from upper claval area down to margin, first two apical cells and partly first two subapical cells tinged with reddish brown; body beneath, pectus, and legs pale green, abdomen above dark green, underneath the lateral sclerites yellow, rest of abdomen and genitalia green, entire clavus dark.

The name *bifasciatus* is derived from the two rainbowlike longitudinal fasciæ on the tegmina.

LUZON, Manila (*F. Q. Otanes*, holotype in my collection; paratypes, Baker collection, U. S. N. M.).

AGELLUS BISINUATUS (DeLong).

Agellus bisinuatus DELONG (*Eugnathodus*), Journ. Porto Rico 7 (1923) 266-267.

Male, length, including tegmina, 3 millimeters.

Body elongate, pale green, without any marking; vertex very short and roundly produced, about one-fourth as long as broad, green, frons yellowish green, genæ and loræ pale green; pronotum yellowish green, rounded in front and almost truncate at apex, appearing like a semicircle, about as long as broad; scutellum a yellowish equilateral triangle, about half as long as pronotum; tegmina pale greenish hyaline, with white veins; body underneath uniformly pale green. The female is more or less dirty pale yellowish beneath; ocelli on margin of vertex near eyes rufous.

LUZON, Manila. MINDANAO, Occidental Misamis Province, Oroquieta. CEBU. MINDORO. NEGROS.

Widely distributed in the United States and West Indies. It was collected in large numbers from mango shoots and from grasses. This species is here reported from the Philippines for the first time.

Division DELTOCEPHALUSARIA

In this division the leafhoppers are mostly very small, with the vertex more or less angularly produced in front of the eyes, and as long as, or longer than, the distance between the eyes.

The genera *Scaphoideus*, *Deltocephalus*, and *Xestocephalus* were studied. Distant⁸³ placed *Xestocephalus* independently under Athysanusaria with no reason other than that its taxonomic position has not been definitely settled.

Key to the Philippine genera of the division Deltocephalusaria.

- α^1 . Face much longer than breadth between eyes, scutellum large, as long as pronotum or slightly longer..... *Scaphoideus* Uhler.
 α^2 . Face much longer than breadth between eyes, scutellum small, shorter than pronotum *Xestocephalus* Van Duzee.
 α^3 . Face scarcely longer than breadth between eyes.

Deltocephalus Burmeister.

Genus SCAPHOIDEUS Uhler

Scaphoideus UHLER, Trans. Maryland Acad. Sci. (1888) 33; PROVANCHER, Pet. Faune. Ent. Can. 3 (1889) 276; VAN DUZEE, Trans. Am. Ent. Soc. 19 (1892) 299; OSBORN, Journ. Cinc. Soc. Nat. Hist. 19 (1900) 187 (monograph); MATSUMURA, Termész. Füzetek 25 (1902) 383; MELICHAR, Hom. Fauna Ceylon (1903) 194; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 371-372; OSBORN, Ohio Nat. 11 (1911) 249.

Type, *S. immistus* (Say).

Distribution: Nearctic, Palæarctic, Ethiopian, Oriental, Malayan, and Australasian Regions.

Head triangular, flat above, vertex almost as long as the width between the eyes, subacuminate at tip, the base deeply sinuated; front longer than wide, deltoid, with the sides near the tip moderately curved, tylus liguliform; cheeks broad, curved, expanded to behind the middle of the eye, acutely tapering at tip and hardly enclosing the entire lora, the lora diagonal, acute at each end; antennæ long and slender; pronotum sublunate, more curved anteriorly than sinuated posteriorly; wing-covers moderately narrow, longer than the abdomen, curved, valvate, the costal areole long, narrow, destitute of cross-veins, followed by a gradually widening cell, beyond this are four apical cells of large size and mostly broad triangular figure; wings with the two apical middle areoles long and narrowing at base towards the cross-vein; abdomen moderately long and narrow.—UHLER, quoted by DISTANT, loc. cit.

SCAPHOIDEUS MOROSUS Melichar.

Scaphoideus morosus MELICHAR, Hom. Fauna Ceylon (1903) 197, pl. 5, fig. 14, *a-d*; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 373-374.

⁸³ Fauna Brit. Ind. Rhynch. 4 (1908) 348.

Female, length, including tegmina, 4.75 millimeters.

Vertex, pronotum and scutellum pale greyish white; vertex with a sub-apical transverse line and a broad fascia between the eyes brownish testaceous; pronotum with four longitudinal testaceous fasciæ (in the specimen figured by Melichar there is an additional fascia on each side); scutellum with three longitudinal fasciæ with dark margins, the two lateral fasciæ darker, shorter, and posteriorly angulated; body beneath and legs pale greyish ochraceous; face with two anterior transversely angulated testaceous lines; posterior tibiæ spotted with piceous tegmina pale greyish white, the veins more or less testaceous, three dark obliquely transverse lines on posterior half of coastal area, a piceous spot preceded by a smaller white spot in central apical cell.—DISTANT, loc. cit.

Originally known from Calcutta, Ceylon, Peradeniya, Point de Galle, Henaratgoda, Colombo.

LUZON, Rizal Province, Alabang (*J. Valdez*).

This species is here reported from the Philippines for the first time.

Genus DELTOCEPHALUS Burmeister

Deltocephalus BURMEISTER, Gen. Ins. 1 subg. 3 (1838); FLOR, Rhyn. Livland. 11 (1861) 221, 223; FIEBER, Verh. Zool.-Bot. Ges. Wien 16 (1866) 506; EDWARDS, Tr., Ent. Soc. London (1888) 33, 42; VAN DUZEE, Trans. Aus. Ent. Soc. 19 (1892) 299; OSBORN and BALL, Iowa Acad. Sci. 4 (1897) 195; MELICHAR, Hom. Fauna Ceylon (1903) 199; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 380; DELONG, Ohio State Univ. Stu. 2 (1926); OSBORN, Ohio Biol. Sur. 3 (1928) 269.

Type, *D. pulicarius* (Fallen), a Palæarctic species.

Distribution probably universal.

According to Distant,⁸⁴ Melichar differentiates this genus as follows:

Vertex pointed or obtusely angularly produced; face symmetrically hexagonal; pronotum broader than long; tegmina longer or slightly shorter than the abdomen, rounded off behind, with distinct veins usually bordered with brown to black; in the clavus a distinct transverse vein running from the outer claval vein to the claval suture.

DELTOCEPHALUS DORSALIS Motschulsky.

Deltocephalus dorsalis MOTSCHULSKY, Etud. Ent. (1859) 114; MELICHAR, Hom. Fauna Ceylon (1903) 200, pl. 5, fig. 13, *a-d*; OSHANIN, Ann. Mus. Zool. St. Peters. 11 (1906) 133; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 380-381, fig. 239; MATSUMURA, Insekten Zuckerrohres Formosa (1910) 20; Journ. Coll. Agr. Sapporo 5 (1914) 213; DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918).

Deltocephalus fulguralis MATSUMURA, Termész. Füzetek 15 (1902) 391.

⁸⁴ Tom. cit. 380.

Length, including tegmina, 3.5 millimeters.

Vertex, body beneath and legs pale ochraceous; with two obscure spots at the transverse depression and two smaller ones near base; pronotum and scutellum greyish; pronotum with some very obscure darker longitudinal shadings; scutellum with a dark spot near each basal angle; coxæ and abdomen beneath with some dark spots; tegmina greyish, with an irregular broad oblique fuscous fascia commencing near base and continued to claval apex, its margins are deeply notched or obtusely angulate and enclose a central pale spot on claval sutures, from apex of clavus there is an oblique series of fuscous-brown spots and the apical cells are margined with the same colour, beyond middle of costal margin is a linear dark spot and there are paler fuscous streaks between the veins and on base of claval area; face with obscure dark striations and pale central spot at base.—DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 380-381.

Originally known in Bengal, Dacca, Calcutta, Ceylon, Yatiyantota, Peradeniya, Henaratgoda, Colombo, Tenasserim, Myitta, Borneo, and Japan.

LUZON, Rizal Province, Alabang (*J. Valdez*).

This species is reported from the Philippines for the first time.

Genus XESTOCEPHALUS Van Duzee

Xestocephalus VAN DUZEE, Trans. Am. Ent. Soc. 19 (1892) 298; MATSUMURA, Termész. Füzetek 25 (1902) 402; MELICHAR, Hom. Fauna Ceylon (1903) 205; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 348.

Type, *X. pulicarius* VAN DUZEE, a Nearctic species.

Distribution: Nearctic, eastern Palæarctic, Ethiopian, and Oriental Regions.

Vertex tumid, rounded over the front, the ocelli placed on the rounded apex between the eyes, almost the same distance from the eyes as from each other; pronotum transverse, somewhat wider than head; body elongate, slightly narrower at pronotum than middle dorsal section of wings; tegmina without an appendix with five apical and three anteapical cells.

XESTOCEPHALUS OSBORNI sp. nov.

Length, including tegmina, 4.25 millimeters.

Head very much narrower than the pronotum, vertex produced before, with the apex subacute, rounded above, and smooth; frons rather broad at base, twice as long as wide; pronotum rounded, slightly produced in front, transverse, about twice as broad as long, more or less semilunar in shape, anterior margin truncate; scutellum triangularly transverse, about one and one-third times as wide as long; tegmina broad, tapering, posterior

lateral margin folded in, having the appearance of *Makilingia* Baker or *Kolla* Distant, but the broadness of the notal and anterior half of the body dorsal regions resembles that of *Hecalus* Stål; body beneath amber ochraceous; last ventral segment truncate, with a slight notch at posterior margin; pygofer long, slender, profusely bristled; ochraceous to amber, vertex ochraceous with amber mark on lateral sides; ocelli very small, placed on anterior edge of vertex, equidistant to each other as to the eyes; eyes fuscous, large, face almost rounded, amber; pectus, venter, and legs concolorous with face, slightly fuscous spot at base of each tibial spur and spinules of posterior legs; pronotum with two dark amber spots at anterior margin just below eyes, ochraceous; scutellum amber, with six short, longitudinal, ochraceous lines at center; tegmina ochraceous, sparsely strewn with fuscous markings, prominent of which are one at posterior apical angle of clavus, one at third posterior margin, and another at apex of tegmina.

LUZON, Mountain Province, Mount Polis (holotype, Osborn collection; type, Baker collection, U. S. N. M.).

This species is named in honor of Prof. Herbert Osborn, a great teacher and entomologist, and owner of the type specimen.

XESTOCEPHALUS MAQUILINGENSIS sp. nov.

Female, about 2.25 millimeters.

A small species similar to *X. pulicarius* Van Duzee and *X. guttatus* Motschulsky though slightly smaller and with slightly darker markings than either.

Vertex ochraceous with cross piceous markings near apex, a faint brown median line and four faint brown markings at base (two on each side of median line); frons castaneous, obtusely rounded, with four pale spots in arcuate arrangement on level with eye and two similar spots just above front clypeal suture; pronotum brown, longer than vertex, transverse, with two parallel rows of pale markings, anterior intercalated by fuscous markings; vertex dark ochraceous, with a black semitriangular spot in basal angles, and between them five almost confluent pale dots; tegmina short and rounded anteriorly, brown, with pale transparent spots scattered all over; the three on posterior last half of costal area large, first spot (on middle of costal region of tegmina) milky white; pectus ochraceous; venter purplish brown and spinulose.

LUZON, Laguna Province, Mount Maquiling (type, Baker collection, U. S. N. M.).

Division PARALIMNUSARIA

Distant⁸⁵ gives the following characteristics of the hoppers under this division:

Vertex somewhat subacutely produced in front of eyes, about or nearly twice as broad between eyes as long; ocelli on the anterior margin very near the eyes.

Genus ALITURALIS novum

Aliturus DISTANT (preoccupied), Fauna Brit. Ind. Rhynch. 4 (1908) 398.

Type, *A. gardineri* Distant.

This monotypic genus was erected by Distant for specimens taken from the Laccadive Archipelago to which he gave the name *Aliturus gardineri*. However, Distant's generic name is preoccupied by *Aliturus* Fairmaire,⁸⁶ a genus of beetles.

Vertex broad, depressed, angularly rounded in front, foveately impressed on each side between eyes, which are large and obliquely cover the anterior angles of the pronotum; ocelli indistinct, near anterior margin and near eyes; face globose, strongly narrowed to clypeus, which is slender and a little more than half the length of face, cheeks rounded; pronotum transverse, longer than vertex, lateral margins nearly straight, anterior margin convex, posterior margin subtruncate; scutellum broad, subtriangular, lateral margins shorter than breadth of basal margin, transversely impressed near middle; legs somewhat slender, posterior tibiae longly spinulose; tegmina opaque, longer than abdomen, veins imperfectly visible.

—DISTANT, loc. cit.

ALITURALIS ALABANGENSIS sp. nov.

Female, length, including tegmina, 4.5 millimeters.

Uniformly dark fuscous, vertex broad, depressed, rounded, slightly angularly produced in front, slightly foveately impressed on each side of eyes, these being indistinctly and finely wrinkled, smooth at the center, anterior margin banded with a dark fuscous, almost black fascia; ocelli stramineous, on the anterior margin near the eyes, and connected by a narrow stramineous band; face globose, strongly narrowed towards the apex; clypeus small, slender, loræ rounded; frons tumid with an ochraceous band at the base abruptly tapering towards the clypeus; cheek broad at base, narrow pieces connecting with the clypeus; pronotum transverse, longer than vertex, slightly rounded anteriorly, truncate at base between eyes; slightly, broadly sinuate at posterior margin, posterior half slightly depressed and faintly

⁸⁵ Tom. cit. 395.

⁸⁶ Ann. Soc. Ent. Fr. 71 (1902) 386.

striate; scutellum subtriangular, slightly broader than long, posterior angle separated by a broadly arcuated suture, two-thirds posterior, profusely, faintly punctured, four ochraceous spots on the lateral sides; tegmina longer than abdomen, six pale ochraceous on the inner margin of clavus close to commissural suture, one at basal area, three at suprabrachial, one at the costal, and eight others on apical and anteapical cells.

LUZON, Rizal Province, Alabang (*J. Valdez*, type and holotype in my collection).

TYPHLOCYBINÆ

Members of this subfamily as described by its author "are readily separated from all the other subfamilies of the Jassidae by the four longitudinal veins defining the apical cells without branching, so that there are no anteapical cells, and also by the absence of supernumerary cells in the wings (Gillette). Tegmina usually without appendix." (Distant.⁸⁷)

Division EMPOASCARIA

Sectors of posterior wings ending in marginal vein; no anteapical cells, venation most simple in the whole family; generally very small cicadellids, rarely over 4 millimeters long, including tegmina; pronotum as long as vertex or longer, except in *Homa* in which it is shorter than vertex.

Genus EMPOASCA Walsh

Empoasca WALSH, Proc. Bost. Soc. Nat. Hist. 9 (1864) 316.

Chloroneura WALSH, Proc. Bost. Soc. Nat. Hist. 9 (1864) 316.

Chloria FIEBER, Verh. Zool.-Bot. Ges. Wien (1866) 508, pl. 7, fig. 25.

Kybos FIEBER, Verh. Zool.-Bot. Ges. Wien (1866) 508, pl. 7, fig. 26.

Chlorita FIEBER, Rev. Mag. Zool. III 3 (1875) 414.

Cicadula KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 1 pt. 9 (1906) 357.

The recognition of species belonging to this genus is practically dependent on the wing venation. The species are small and "usually green, sometimes yellow, red or smoky black. Ocelli present, elytra without appendix, wings with marginal vein, one apical cell. Genital valve in male wanting." (Osborn.⁸⁸)

EMPOASCA NIGROPUNCTATA sp. nov.

Very small species, about 2 millimeters long, including tegmina; vertex obtusely angularly produced, almost as long as

⁸⁷ Fauna Brit. Ind. Rhynch. 4 (1908) 399.

⁸⁸ Ohio Biol. Sur. 3 (1928) 345.

broad between eyes, yellowish green, with two black spots on vertex near apex, temple and upper part of frons yellow, the rest greenish yellow, narrowly striated with fuscous lines; clypeus piceous; ocelli not quite visible, amber-colored; pronotum twice as long as vertex, roundly produced, terminal angle almost truncate, slightly broadly sinuate; yellowish green, with dark gray tinge on center; scutellum concolorous with head and pronotum, small, without markings; tegmina hyaline, with smoky veins; body beneath piceous, legs pale green.

LUZON, Manila: Rizal Province, Alabang (*J. Valdez*, holotype in my collection).

CHECK LIST OF THE PHILIPPINE CICADELLIDÆ WITH THE ORIGINAL BIBLIOGRAPHY AND SYNONYMY*

Family CICADELLIDÆ

Subfamily I. LEDRINÆ

Petaloccephala Stål.

**Petaloccephala cultellifera* WALKER, List Hom. 3 (1851) 823; Journ. Linn. Soc. Zool. 1 (1856) 98 (*Ledra*); MELICHAR, Hom. Fauna Ceylon (1903) 143 (*Ledropsis*).

Petaloccephala conica WALKER, List Hom. 3 (1851) 823; DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 164.

Petaloccephala punctatissima STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 732.

Petaloccephala philippina STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 732.

Ledra Fabricius.

Ledra gibba WALKER, List Hom. Ins. 3 (1851) 811.

Ledra lævis WALKER, List Hom. Ins. 3 (1851) 827.

Ledra unicolor WALKER, List Hom. Ins. 3 (1851) 819.

Subfamily II. BYTHOSCOPIINÆ

Macropsis Lewis.

Macropsis breakeyi sp. nov.

Macropsis rizali sp. nov.

Macropsis benguetensis sp. nov.

Macropsis fuscovenosa sp. nov.

Macropsis fuscopunctata sp. nov.

Macropsis otanesi sp. nov.

Macropsis basilana sp. nov.

Macropsis dapitana sp. nov.

Macropsis davaoensis sp. nov.

* In the preparation of this check list, I am most indebted to the unpublished notes of the late Charles Fuller Baker, deposited in the United States National Museum. I found the notes after this list was already prepared from available literature and new species described in this paper. Many names were added to my list from Baker's notes. An asterisk before a name indicates that the species is here first recorded as Philippine.

Idiocerus Lewis.

Idiocerus clypealis LETHIERRY, Journ. As. Soc. Bengal 57 (1889) 252;

BAKER, Philip. Journ. Sci. § D 10 (1915) 339 (*Idioscopus*).

Idiocerus nacreatus BAKER, Philip. Journ. Sci. § D 10 (1915) 342.

Idiocerinus Baker.

Idiocerinus melichari BAKER, Philip. Journ. Sci. § D 10 (1915) 341-342.

Idiocerinus bakeri sp. nov.

Idioscopus Baker.

Idioscopus palawanensis BAKER, Philip. Journ. Sci. § D 10 (1915) 338-339.

Idioscopus tagalicus BAKER, Philip. Journ. Sci. § D 10 (1915) 340-341.

Iposcopus Baker.

Iposcopus breviceps BAKER, Philip. Journ. Sci. § D 10 (1915) 322.

Iposcopus distanti BAKER, Philip. Journ. Sci. § D 10 (1915) 321-322.

Ipocerus Baker.

Ipocerus kirkaldyi BAKER, Philip. Journ. Sci. § D 10 (1915) 323-324.

Balocha Distant.

Balocha busonioides BAKER, Philip. Journ. Sci. § D 10 (1915) 330.

Bythoscopus Germar.

**Bythoscopus chlorophanus* MELICHAR, Hom. Fauna Ceylon (1903) 153.

Bythoscopus maculipennis STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 740 (*Macropsis*).

Bythoscopus testaceus sp. nov.

**Bythoscopus rubrofrontalis* DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 209, fig. 125.

Chunra Walker.

Chunra niveosparsa LETHIERRY, Journ. As. Soc. Bengal 58 (1889) 252 (*Idiocerus*); MELICHAR, Hom. Fauna Ceylon (1903) 143 (*I. basalis*); BAKER, Philip. Journ. Sci. § D 10 (1915) 325 (*Chunra*).

Chunra niveosparsa Lethierry var. *lagunensis* BAKER, Philip. Journ. Sci. § D 10 (1915) 326.

Chunra niveosparsa Lethierry var. *palawanensis* BAKER, Philip. Journ. Sci. § D 10 (1915) 326.

Chunra niveosparsa Lethierry var. *philippinensis* BAKER, Philip. Journ. Sci. § D 10 (1915) 325-326.

Busonia Distant.

Busonia mindanaoensis BAKER, Philip. Journ. Sci. § D 10 (1915) 328.

Busonia scutellaris BAKER, Philip. Journ. Sci. § D 10 (1915) 327.

Pedioscopus Kirkaldy.

Pedioscopus angustatus BAKER, Philip. Journ. Sci. § D 10 (1915) 335-336.

Pedioscopus coloratus BAKER, Philip. Journ. Sci. § D 10 (1915) 338.

Pedioscopus coloratus var. *bicoloratus*, BAKER, Philip. Journ. Sci. § D 10 (1915) 338.

Pedioscopus coloratus var. *mindanaoensis* BAKER, Philip. Journ. Sci. § D 10 (1915) 337.

Pedioscopus disjunctus BAKER, Philip. Journ. Sci. § D 10 (1915) 331.

Pedioscopus maquilingensis BAKER, Philip. Journ. Sci. § D 10 (1915) 333-334.

Pedioscopus modestus BAKER, Philip. Journ. Sci. § D 10 (1915) 333.

- Pedioscopus similis* BAKER, Philip. Journ. Sci. § D 10 (1915) 334-335.
Pedioscopus simplex BAKER, Philip. Journ. Sci. § D 10 (1915) 336.

Subfamily III. TETTIGONIELLINÆ

Cicadella (*Tettigonia*) (*Tettigoniella*) Latreille.

- Cicadella argyrops* SIGNORET, Ann. Soc. Ent. Fr. (1853) 678 (*Tettigonia*).
Cicadella bipunctifrons STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 733-734 (*Tettigonia*).
Cicadella differentialis BAKER, Philip. Journ. Sci. § D 9 (1914) 420 (*Tettigoniella*).
Cicadella ferruginea FABRICIUS, Ent. Syah. 4 (1794) 32 (*Cicada*); GERMAR, Mag. Ent. 4 (1821) 69 (*Tettigonia*); WALKER, List Hom. Ins. 3 (1851) 736 (*T. confinis*); 737 (*T. addita*); 737 (*T. gemina*); 738 (*T. obscura*); 738 (*T. duplex*); 739 (*T. reducta*); 740 (*T. immaculata*); STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 733 (*T. impressipennis*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 202-203 (*Tettigoniella*).
Cicadella impudica SIGNORET, Ann. Soc. Ent. Fr. III 1 (1853) 677 (*Tettigonia*).
Cicadella longa WALKER, List Hom. Ins. 3 (1851) 740 (*Tettigonia*). China determines this species (Baker collection) as distinct from *C. ferruginea*.
Cicadella maquilangensis BAKER, Philip. Journ. Sci. § D 9 (1914) 419, fig. 10 (*Tettigoniella*).
Cicadella norma SIGNORET, Ann. Soc. Ent. Fr. (1853) 671 (*Tettigonia*).
Cicadella philippina WALKER, List Hom. Ins. 3 (1851) 740 (*Tettigonia*).
Cicadella quinquepunctata STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 734, fig. 137 (*Tettigonia quinquenotata*); BANKS, Philip. Journ. Sci. § D 5 (1910) 52 (*Kolla tripunctifrons*).
Cicadella spectra DISTANT, nom. nov., Fauna Brit. Ind. Rhynch. 4 (1908) 211-212 (*Tettigoniella spectra*); WALKER, List Hom. 3 (1851) 767 (*Tettigonia albida*); STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 735 (*T. nigrilinea*).
Cicadella spectra DISTANT var. *nigrilinea* STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 735 (*Tettigonia*).
Cicadella subvirescens STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 734 (*Tettigonia*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 212.
Cicadella suturella STÅL, Öfv. Vet.-Akad. Förh. 5 (1855) (*Tettigonia*).
Cicadella nigrifasciata sp. nov.
Cicadella tagalica STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 734 (*Tettigonia*); BAKER, Philip. Journ. Sci. § D 10 (1915) 196 (*Tettigoniella*).
Cicadella titonii SIGNORET, Ann. Soc. Ent. Fr. (1855) 783 (*Tettigonia*).
Cicadella alticola sp. nov.
Cicadella unimaculata SIGNORET, Ann. Soc. Ent. Fr. (1854) 25 (*Tettigonia*); WALKER, List Hom. Suppl. (1858) 219 (*T. paullula*); STÅL, Freg. Eug. Resa Ins. (1859) 258 (*T. kingbergi*); WALKER, Journ.

- Linn. Soc. Lond. Zool. 10 (1869) 304 (*T. igniceps*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 224 (*Tettigoniella*) (Kolla).
Cicadella whiteheadi DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 142 (*Tettigoniella*).
Kolla Distant.
Kolla tripunctifrons BANKS, Philip. Journ. Sci. § 5 (1910) 51.
Signoretia Stål.
Signoretia malaya STÅL, Öfv. Vet.-Akad. Förh. (1855) 192 (*Thamnottetix*); Freg. Eug. Resa Ins. (1865) 290 (*Signoretia*).
Signoretia tagalica BAKER, Philip. Journ. Sci. § D 10 (1915) 196.
Signoretia carinata BAKER, Philip. Journ. Sci. 23 (1923) 358.
Signoretia benguetensis BAKER, Philip. Journ. Sci. 23 (1923) 359.
Preta Distant.
Preta luzonensis BAKER, Philip. Journ. Sci. 23 (1923) 361-362.
Mileewa Distant.
Mileewa luzonica BAKER, Philip. Journ. Sci. § D 9 (1914) 415.
Mileewa luzonica var. *decolorata* BAKER, Philip. Journ. Sci. § D 9 (1914) 416.
Ujna Distant.
Ujna philippinensis BAKER, Philip. Journ. Sci. § D 9 (1914) 416.
Makilingia Baker.
Makilingia banahaoensis BAKER, Philip. Journ. Sci. 24 (1924) 64.
Makilingia colorata BAKER, Philip. Journ. Sci. § D 9 (1914) 413.
Makilingia costalis BAKER, Philip. Journ. Sci. 24 (1924) 69.
Makilingia flavifrons MELICHAR, Wiener Ent. Zeit. 40 (1923) 119; BAKER, Philip. Journ. Sci. 24 (1924) 67 (*M. bimaculata*).
Makilingia frontalis BAKER, Philip. Journ. Sci. 24 (1924) 69-70.
Makilingia haightiana BAKER, Philip. Journ. Sci. 24 (1924) 65.
Makilingia intermedia MELICHAR, Wiener Ent. Zeit. 40 (1923) 119; BAKER, Philip. Journ. Sci. 24 (1924) 159 (*variabilis*).
Makilingia intermedia var. *bakeri* MELICHAR, Wiener Ent. Zeit. 40 (1923) 120.
Makilingia intermedia var. *simillima* BAKER, Philip. Journ. Sci. 24 (1924) 63-64.
Makilingia intermedia var. *suturalis* MELICHAR, Wiener Ent. Zeit. 40 (1923) 119; BAKER, Philip. Journ. Sci. 27 (1925) 159.
Makilingia lineata BAKER, Philip. Journ. Sci. 24 (1924) 65.
Makilingia maculata BAKER, Philip. Journ. Sci. § D 9 (1914) 413.
Makilingia nigra BAKER, Philip. Journ. Sci. § D 9 (1914) 409.
Makilingia pallida BAKER, Philip. Journ. Sci. § D 9 (1914) 414.
Makilingia panayensis BAKER, Philip. Journ. Sci. 24 (1924) 66.
Makilingia pruinosa BAKER, Philip. Journ. Sci. § D 9 (1914) 412.
Makilingia sibuyanensis BAKER, Philip. Journ. Sci. 24 (1924) 62.
Makilingia speciosa BAKER, Philip. Journ. Sci. 24 (1924) 61.
Makilingia surigaoensis BAKER, Philip. Journ. Sci. 24 (1924) 66.

Subfamily IV. GYPONINÆ

Division 1. PENTHIMARIA

Penthimia Germar.

- Penthimia alboguttula* STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737.
Penthimia reticulata STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737.

Penthimia erebus STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737.

Penthimia hemifuscata sp. nov.

Thaumatoscopus Kirkaldy.

Thaumatoscopus roxasi sp. nov.

Thaumatoscopus reflexus STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 738.

Neodartus Melichar.

**Neodartus acocephaloides* MELICHAR, Hom. Fauna Ceylon (1903) 163.

Vulturinus Kirkaldy.

Vulturinus reticulatus STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737.

Division 2. HYLICARIA

Pythamus Melichar.

Pythamus melichari BAKER, Philip. Journ. Sci. § D 10 (1915) 198.

Pythamus melichari var. *mindanaoensis* BAKER, Philip. Journ. Sci. § D 10 (1915) 200.

Subfamily V. JASSINÆ (including ACOCEPHALINÆ)

Division 1. HECALUSARIA

Hecalus Stål.

Hecalus thomsonii STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737.

Hecalus gramineus sp. nov.

Hecalus florii STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 736.

**Hecalus capitatus* DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918) 30.

Hecalus wallengrenii STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 736.

Thomsoniella Signoret.

**Thomsoniella albomaculata* DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 280-281.

Thomsoniella porrecta WALKER, List Hom. Suppl. (1858) 262 (*acocephalus*); MOTSCHULSKY, Etud. Ent. 8 (1859) (*Platymetopius lineolatus*); STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 737 (*Hecalus kirschbaumii*); SIGNORET, Ann. Soc. Ent. Fr. (1880) 52 (*Thomsoniella*); ATKINSON, Journ. As. Soc. Bengal 54 (1885) 104 (*Thomsonia*); DISTANT, Fauna Brit. Ind. Rhynch. 7 (1918) 31 (*Parabolo-cratus*).

Nirvana Kirkaldy.

Nirvana placida STÅL, Freg. Eug. Resa Ins. (1859) 295 (*Jassus*); MELICHAR, Hom. Ceylon (1903) 160 (*N. pallida*).

Nirvana philippinensis BAKER, Philip. Journ. Sci. 23 (1923) 385.

Ophiuchus Distant.

Ophiuchus basilanus BAKER, Philip. Journ. Sci. 23 (1923) 394.

Ophiuchus montanus BAKER, Philip. Journ. Sci. 23 (1923) 395.

Kana Distant.

Kana anomala BAKER, Philip. Journ. Sci. 23 (1923) 385.

Kana maculata BAKER, Philip. Journ. Sci. 23 (1923) 382.

Kana picea BAKER, Philip. Journ. Sci. 23 (1923) 383.

Jassonirvana Baker.

Jassonirvana lineata BAKER, Philip. Journ. Sci. 23 (1923) 399-400.

Pseudonirvana Baker.

Pseudonirvana davaoensis BAKER, Philip. Journ. Sci. 23 (1923) 39.

Pseudonirvana davaoensis var. *luzonensis* BAKER, Philip. Journ. Sci. 23 (1923) 392.

Pseudonirvana sanguinolineata BAKER, Philip. Journ. Sci. 23 (1923) 392-393.

Stenometopius Matsumura.

Stenometopius mindanaoensis BAKER, Philip. Journ. Sci. 23 (1923) 400-401.

Division 2. SELENOCEPHALARIA

Paramesus Fieber.

**Paramesus lineaticollis* DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 294, fig. 186.

Krisna Kirkaldy.

Krisna strigicollis SPINOLA, Mem. de Matem. e di Fis. Ital. Modena (1852) 167 (*Siva*); WALKER, List Hom. 3 (1851) 847 (*Acocephalus stramineus*); Journ. Linn. Soc. Zool. 1 (1857) 173 (*Bythoscopus testaceus*); List Hom. Suppl. (1858) 266 (*B. indicatus*); STÅL, Freg. Eug. Resa Ins. (1859) 290 (*Selenocephalus costalis*); Ann. Soc. Ent. Fr. (1864) 66 (*Siva*); SIGNORET, Ann. Soc. Ent. Fr. (1879) 88 (*Acocephalus stramineus*); ATKINSON, Journ. As. Soc. Bengal 54 (1885) 108 (*Siva strigicollis*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 297-298 (*Krisna*).

**Krisna striata* KIRBY, Journ. Linn. Soc. Zool. 24 (1891) 171 (*Gypona*); KIRKALDY, Entomologist 33 (1900) 294 (*kirbyi*); 34 (1901) 39 (*Eogypona kirbyi*); MELICHAR, Hom. Fauna Ceylon (1903) 167 (*Siva*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 298 (*Krisna striata*).

Roxasella gen. nov.

Roxasella camusi sp. nov.

Roxasella losbañoso sp. nov.

Omanella gen. nov.

Omanella barberi sp. nov.

Omanella philippina sp. nov.

Omanella johnsoni sp. nov.

Parabolocratus Uhler.

**Parabolocratus gutattus* UHLER, Proc. U. S. Nat. Mus. 19 (1896) 291-292 (*Parabolocratus*) (in Baker collection); MATSUMURA, Coll. Agr. Hokoku Imp. Univ. Pub. 4 (1912) (*Parabolopona*); 6,000 Illustrated Insects of Japan-Empire (1931) (*Parabolopona*).

Division 3. TARTESSUSARIA

Tartessus Stål.

Tartessus ferrugineus WALKER, List Hom. 3 (1851) 865 (*Bythoscopus*); STÅL, Freg. Eug. Resa Ins. (1859) 290 (*B. malayus*, *biarcatus*, *unilineatus*, *unifascia* Walker, MS.); Öfv. Vet.-Akad. Förh. (1865) 165 (*Tartessus malayus*); 27 (1870) 738 (*T. ferrugineus*).

Tartessus malayus STÅL, Freg. Eug. Resa Ins. (1859) 290.

Tartessus fieberi STÅL, Öfv. Vet.-Akad. Förh. (1865) 156.

Gessius Distant.

Gessius malayensis var. *mindanaoensis* BAKER, Philip. Journ. Sci. 15 (1919) 217.

Drabescus Stål.

Drabescus conspicuous DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 306 (in Baker collection).

Drabescus remotus WALKER, Cat. Hom. 3 (1851) 866.

Drabescus stramineus DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 306-307 (in Baker collection).

Tylissus Stål.

Tylissus nitens STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 739.

Division 4. JASSUSARIA

Jassus Fabricius.

Jassus conspersus STÅL, Öfv. Vet.-Akad. Förh. (1854) 254 (*Coelidia sparsa*); 27 (1870) 735 (*Jassus conspersus*).

Jassus dubia WALKER, List Hom. 3 (1851) 781 (*Tettigonia*); STÅL, Öfv. Vet.-Akad. Förh. (1862) 494 (*Coelidia*); DISTANT, Rec. Ind. Mus. 2 (1908) 150 (*Jassus dubia*).

Jassus elegans DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 329.

Jassus obscurus STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 736.

Jassus philippinensis STÅL, Öfv. Vet.-Akad. Förh. 27 (1870) 736.

Jassus luzonensis BAKER, Philip. Journ. Sci. § D 10 (1915) 56-57.

Jassus sparsus STÅL, Öfv. Vet.-Akad. Förh. (1854) 254.

Jassus mindanaoensis sp. nov.

Tharra Kirkaldy.

Tharra carinata BAKER, Philip. Journ. Sci. § D 10 (1915) 58.

Division 5. ATHYSANUSARIA

Athysanus Burmeister (*Phrynomorphus* Curtis).

Athysanus atkinsoni DISTANT, Fauna Brit. Ind. Rhynch. 4 (1918) 345 (*Athysanus*).

**Athysanus fusconervosus* MOTSCHULSKY, Bull. Soc. Nat. Moscow 36 (1863) 97 (in Baker collection).

**Athysanus indicus* DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 344 (in Baker collection).

Stirellus Osborn and Ball.

Stirellus nigripectus sp. nov.

Acocephalus Germar.

Acocephalus olivaceus WALKER, List Hom. 3 (1851) 846.

Xestocephalus Van Duzee.

Xestocephalus osborni sp. nov.

Xestocephalus maquilangensis sp. nov.

**Xestocephalus guttatus* MOTSCHULSKY, Etud. Ent. (1859) 113 (*Deltocephalus*); MATSUMURA, Termész. Füzetek (1902) 25 (*Xestocephalus*) (in Baker collection).

**Xestocephalus pardalinus* DISTANT, Fauna Brit. Ind. 4 (1908) 35 (in Baker collection).

Division 6. THAMNOTETTIXARIA

Nephotettix Matsumura.

**Nephotettix bipunctatus* FABRICIUS, Syst. Rhyng. (1803) 78 (*Cicada*); STÅL, Hem. Fabr. 2 (1869) 82 (*Thamnotettix*); MATSUMURA Termész. Füzetek 25 (1902) 379 (*Nephotettix*).

Nephotettix apicalis MOTSCHULSKY, Etud. Ent. (1859) 110 (*Pediopsis*); UHLER, Proc. U. S. Nat. Mus. 19 (1896) 292 (*Selenocephalus cincticeps*); MATSUMURA, Termész. Füzetek 25 (1902) 379 (*P. nigromaculata*); MELICHAR, Wiener Ent. Zeit. 24 (1905) 305 (*N. apicalis*).

Eutettix Van Duzee.

- **Eutettix disciguttus* WALKER, Journ. Linn. Soc. Lond. Zool. 1 (1857) 172 (*Acocephalus*); SIGNORET, Ann. Soc. Ent. Fr. (1879) 88 (*Eythoscopus*); UHLER, Proc. U. S. Nat. Mus. 19 (1896) 244 (*Thamnotettix sellata*); MATSUMURA, Termész. Füzetek 25 (1902) 381 (*Eutettix sellatus*); MELICHAR, Notes Leyd. Mus. 36 (1913) 133.

Eutettix marquezii sp. nov.

Eutettix basilanus sp. nov.

Eutettix morismus sp. nov.

Division 7. CICADULARIA

Cicadula Zett.

Cicadula arevaloi sp. nov.

Balclutha Kirkaldy.

Balclutha graminea sp. nov.

Balclutha olivacea MELICHAR, Wiener Ent. Zeit. 40 (1923) 100.

Agellus DeLong and Davidson.

Agellus bifasciatus sp. nov.

- **Agellus neglecta* DELONG and DAVIDSON, Ohio Journ. Sci. 33 (1933) 55-56 (*Eugnathodus*); 33 No. 3 (1933) (*Agellus*).

- **Agellus bisinuatus* DELONG, Journ. Dept. Agr. Porto Rico 7 (1933) 266-267.

Agellus philippinensis sp. nov.

Agellus rufofasciatus sp. nov.

Division 8. DELTOCEPHALUSARIA

Deltocephalus Burmeister.

- **Deltocephalus dorsalis* MOTSCHULSKY, Etud. Ent. (1859) 114.

- **Deltocephalus distinctus* MOTSCHULSKY, Etud. Ent. (1859) 112; MATSUMURA, Termész. Füzetek 25 (1902) 381 (*fulguralis*).

Scaphoideus Uhler.

- **Scaphoideus morosus* MELICHAR, Hom. Fauna Ceylon (1903) 197.

Division 9. PARALIMNUSARIA

Alituralis nom. nov. (*Aliturus* Distant).

Alituralis alabangensis sp. nov.

Xestocephalus Van Duzee.

Xestocephalus osborni sp. nov.

Xestocephalus maquilingensis sp. nov.

Subfamily VI. TYPHLOCYBINÆ

Division 1. EMPOASCARIA

Empoasca Walsh.

- Empoasca flavescens* FABRICIUS, Ent. Syst. 4 (1794) 46 (*Cicada*); MELICHAR, Cicad. Mitt. Europ. (1896) 326 (*Chlorita*); KIRKALDY, Exp. Sta. Haw. Sugar Planters' Assoc. Bull. 9 (1906) 357 (*Cicadula*); DISTANT, Fauna Brit. Ind. Rhynch. 4 (1908) 405 (*Empoasca*); WOODWORTH, Philip. Agric. 10 (1921) 22.

Empoasca nigropunctata sp. nov.

Division 2. TYPHLOCYBARIA

Typhlocyba Germar.

Typhlocyba nigrobilineata MELICHAR, Hom. Ceylon (1903) 218.

Erythroneura Fitch.

**Erythroneura nigrobimaculata* MOTSCHULSKY, Bull. Soc. Nat. Moscow 36 (1863) 101; BAKER, unpublished notes (*Typhlocyba*) (in Baker collection).

Insert after the synonymy on page 334:

Very pale yellow; head short conical above, almost straight along the hind border; face flat on the disk, with indistinct, oblique ridges, on each side; dorsal abdominal segments with a puncture on each side; legs yellowish white; wings white. Length of body $3\frac{1}{2}$ lines; of the wings 7 lines.—WALKER, List Hom. Insects 3 (1853) 767.

ILLUSTRATIONS

PLATE 1

- FIG. 1. *Idiocerinus bakeri* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, male external genitalia.
2. *Macropsis breakeyi* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
3. *Macropsis rizali* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
4. *Macropsis benguetensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
5. *Macropsis fusconervosa* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
6. *Macropsis fuscopunctata* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
7. *Macropsis luzonensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
8. *Macropsis basilana* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
9. *Macropsis otanesi* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
10. *Macropsis davaoensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
11. *Cicadella longa* Walker; front.
12. *Cicadella longa* Walker; *a*, female external genitalia.
13. *Macropsis dapitana* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.

PLATE 2

- FIG. 1. *Cicadella alticola* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
2. *Penthimia hemifuscata* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
3. *Thaumatoscopus roxasi* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, male external genitalia.
4. *Hecalus gramineus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, lateral view of vertex, pronotum, and scutellum.
5. *Cicadella nigrifasciata* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, male external genitalia.
6. *Xestocephalus osborni* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
7. *Alituralis alabangensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.

- FIG. 8. *Cicadella suturella* Stål; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 9. *Xestocephalus maquilingsis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 10. *Empoasca nigropunctata* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front.

PLATE 3

- FIG. 1. *Roxasella* gen. nov. *camusi* sp. nov. (type of the genus); *a*, adult; *b*, front; *c*, male external genitalia.
 2. *Roxasella losbañosa* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, external male genitalia.
 3. *Omanella* gen. nov. *philippina* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, male external genitalia.
 4. *Omanella johnsoni* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 5. *Omanella barberi* sp. nov. (type of the genus); *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 6. *Jassus mindanaoensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, last ventral segment of female.

PLATE 4

- FIG. 1. *Cicadula arevaloi* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 2. *Stirellus nigripectus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 3. *Eutettix marquezii* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 4. *Agellus rufofasciatus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 5. *Eutettix morismus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 6. *Eutettix basilanus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia; *d*, male external genitalia.
 7. *Agellus neglectus* DeLong and Davidson; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 8. *Balclutha graminea* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 9. *Agellus bifasciatus* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 10. *Agellus philippinensis* sp. nov.; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.
 11. *Agellus*; tegminal venation.
 12. *Agellus neglectus* DeLong and Davidson; internal genitalia.
 13. *Agellus bisinuatus* DeLong; *a*, vertex, pronotum, and scutellum; *b*, front; *c*, female external genitalia.

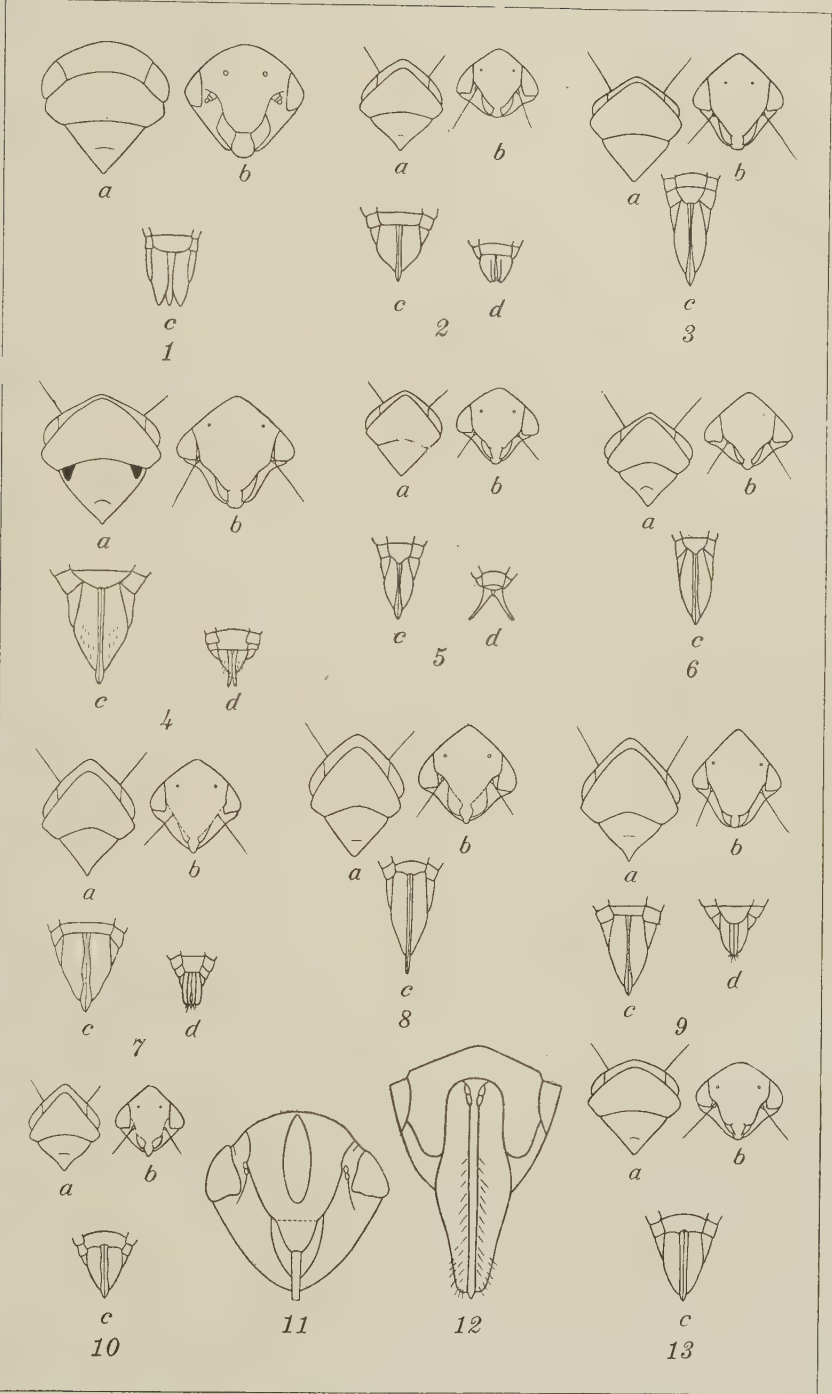


PLATE 1.

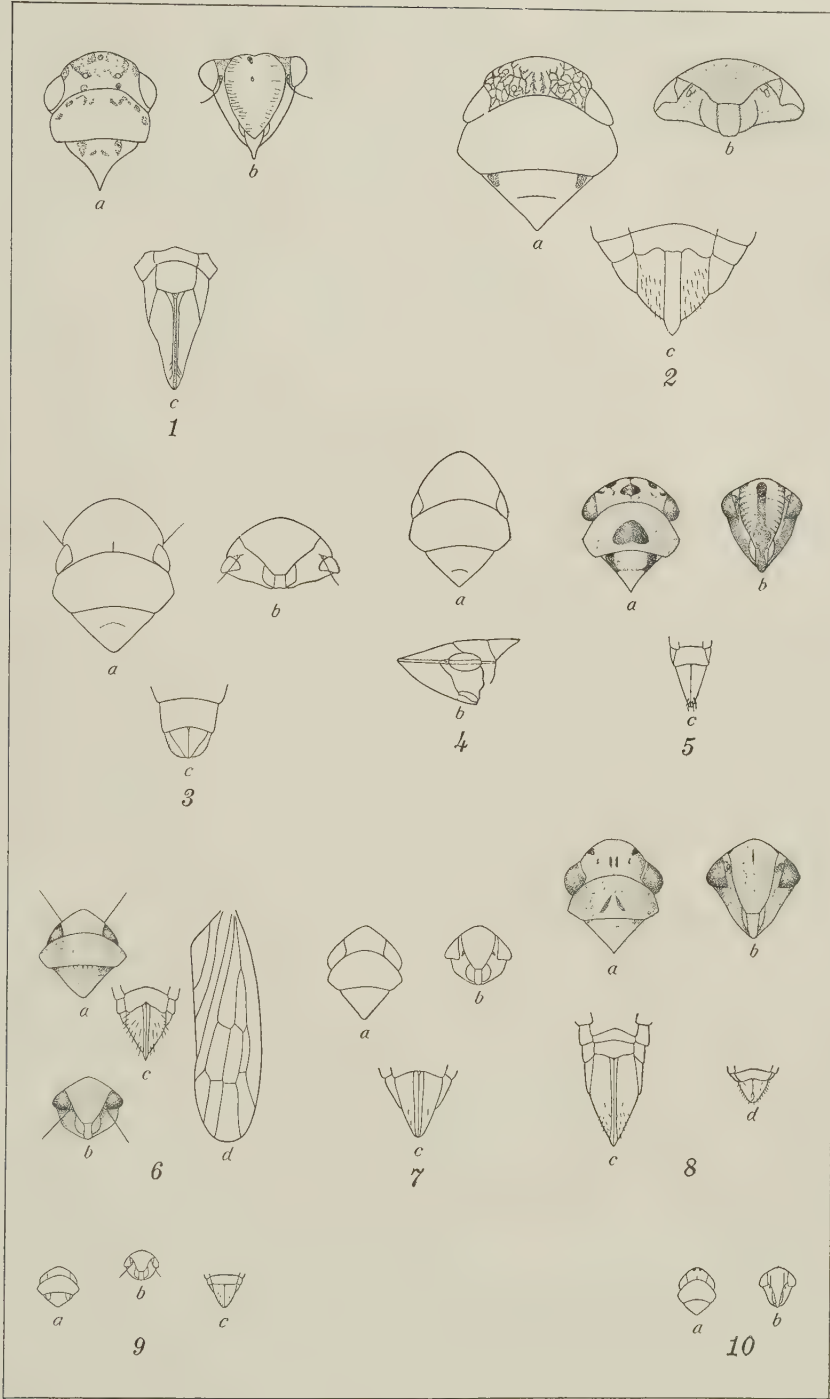


PLATE 2.

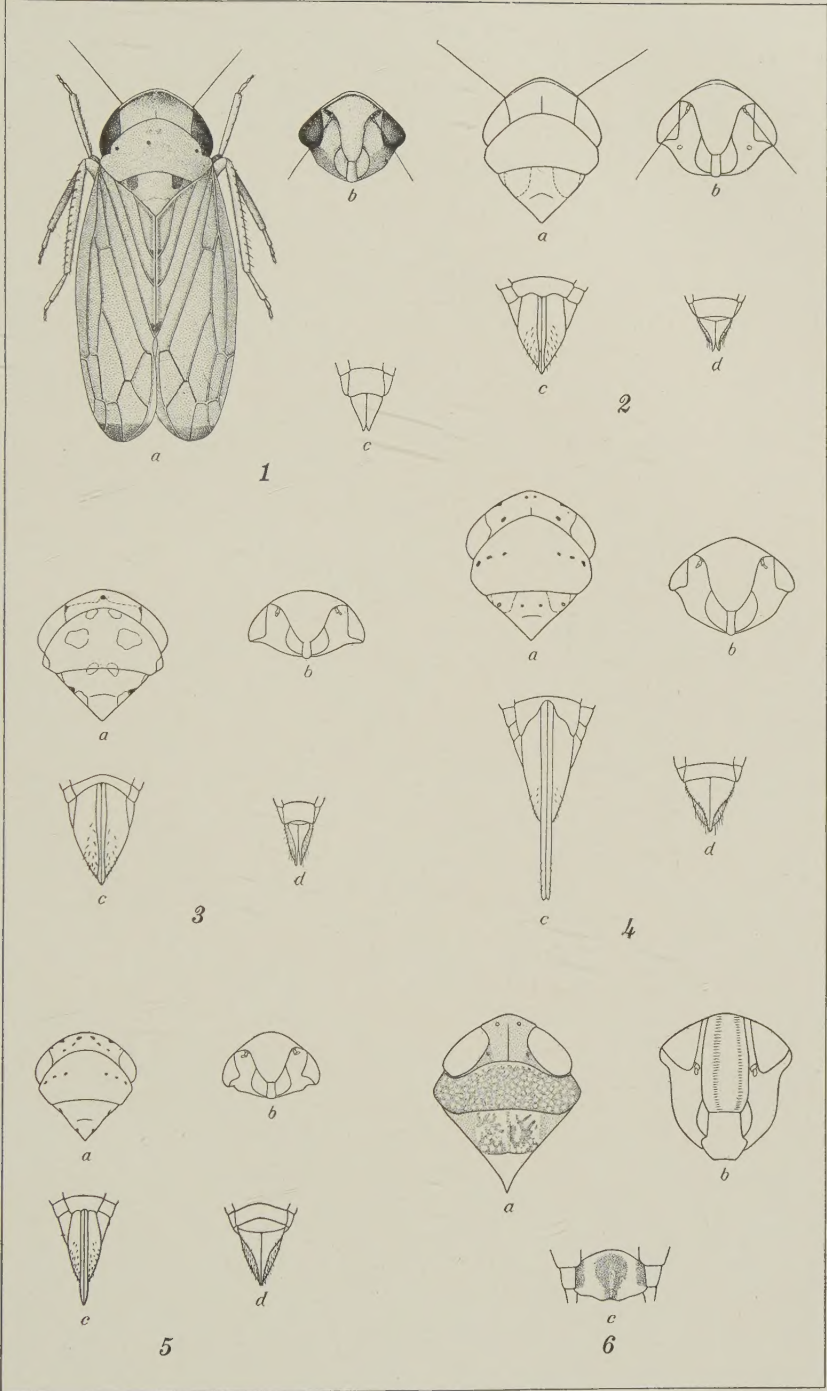


PLATE 3.

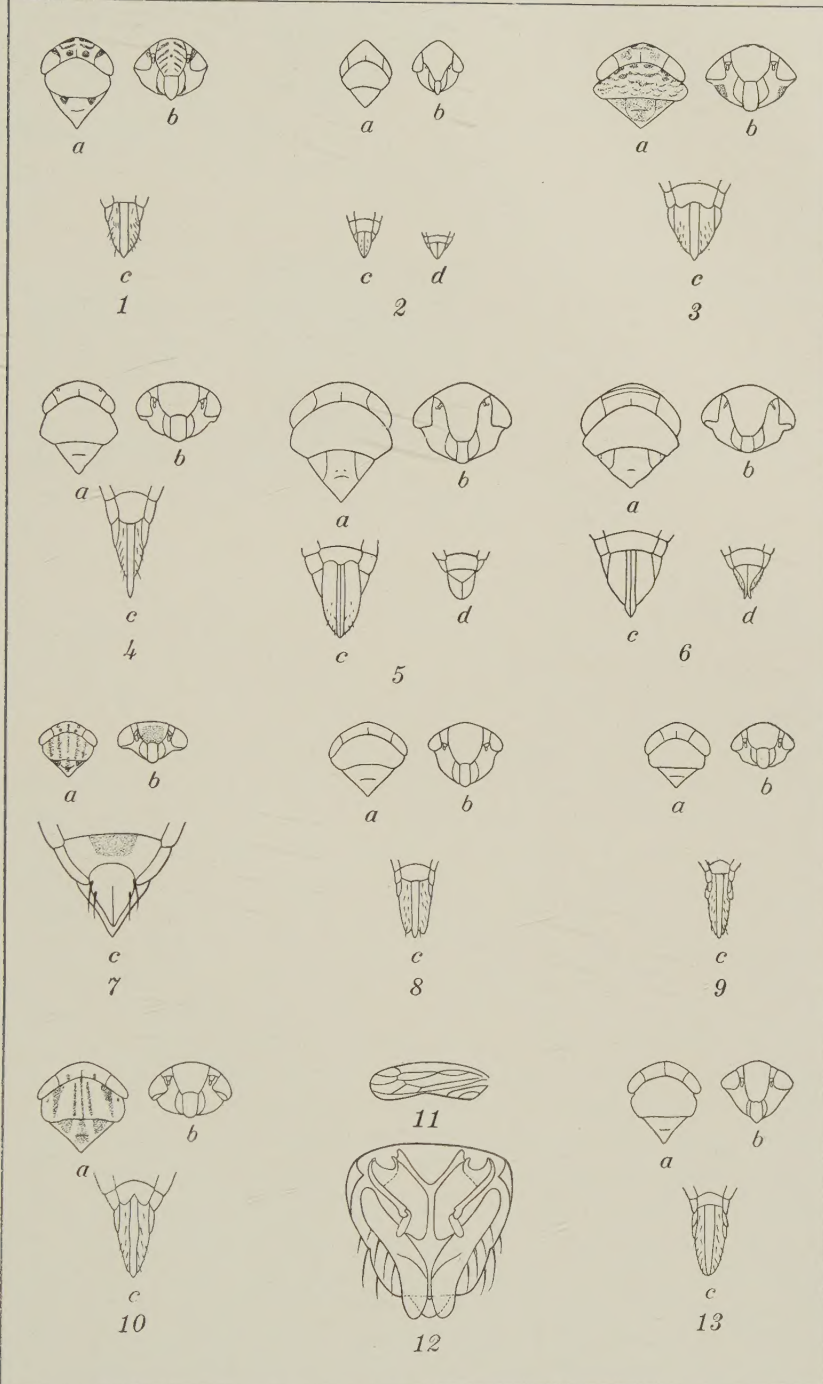


PLATE 4.

